

*Public Use at
Don Edwards
San Francisco Bay
National Wildlife Refuge*



Annual Narrative 1995

*Education, interpretation, volunteers,
and other wildlife-oriented programs for people*

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1995 ANNUAL NARRATIVE PUBLIC USE SECTIONS

E.2. Youth Programs

Boy Scouts and Girl Scouts -- During 1995, the Refuge had 4 employees involved with Scouting. A total of 320 hours, consisting of 240 hours of duty time and 80 hours of volunteer time, were logged.

Staff and volunteers continued to meet, upon request, with girl and boy scout troops during after-school and weekend visits to the Refuge. Usually the troops were fulfilling requirements for badges and the staff or volunteers presented programs based on what the troop leader requested.

E.4. Volunteer Program

Once again, volunteers were vital to the continued success of many of the Refuge's programs. Volunteers staffed the Visitor Center 95% of the time, patrolled the Refuge trails and fishing pier, and presented 98% of the weekend interpretive programs, including walks, slide shows and tours. Volunteers were vital to the Environmental Education Program, helping develop new activities and materials, and assisting with learning stations on field trips. Volunteers provided administrative help in the office with mailings, data entry, and general clerical help, and also assisted with many maintenance projects around the Refuge, especially weeding, pruning, and painting. Resource management projects which utilized our volunteers included growing and planting of native species, weeding of non-natives, the Annual Butterfly Count at Antioch Dunes NWR, bird call counts and surveys.

Total hours contributed by 1,005* registered volunteers throughout the year was 27,874*, which at a minimum wage of \$4.25 per hour, saved the government \$118,465. This included Refuge volunteers, non-Refuge volunteers and Student Conservation Association (SCA) interns. Refuge volunteers are required to go through a 20-hour orientation and training, and to commit 16 hours a month (which is flexible). Currently, there are 166 Refuge volunteers on staff. Non-Refuge volunteers include community, scout, school, church, prison work and alternative sentencing groups, as well as other one-time volunteers.

Volunteers were vital to the success of many Refuge events, including Kids' Day, the Native Plant Sales, Earth Day, Migratory Bird Day, Coast Clean-up and National Wildlife Refuge Week.

* Total number of registered volunteers and hours do not include those from Humboldt NWR.

Volunteers helped organize and run the Earth Day festivities this year. Hourly programs, children's activities, nature walks, environmental organizations' displays, and the Native Plant Sale focused on this year's theme of "Year of Endangered Species - Take Responsibility."

Approximately 605 people contributed 1,788 hours during the 11th Annual Coast Clean-up. Volunteers from the public and Refuge volunteers helped clean up three main sites: the Refuge headquarters area, the Environmental Education Center, and Coyote Creek Lagoon.

Volunteers also helped organize and run events in celebration of National Wildlife Refuge Week. Volunteers assisted with the Evening Campfire Sing-Along, Shark Day, Refuge Rhapsody, Environmental Information Fair, and Plant Sale.

Some of our youngest volunteers shared their knowledge with their peers during this past summer's Junior Naturalist program. These volunteers, previous graduates of the Junior Naturalist program, as well as other new and established environmental education volunteers assisted staff in teaching 3rd through 6th graders about the salt marsh and the importance of preserving the environment.

Volunteers assisted in various projects at other National Wildlife Refuges. Working with the Cooperating Association, volunteers continue to order the books not only for Don Edwards San Francisco Bay NWR, but also for sales outlets at Klamath, Sacramento, and Malheur NWRs. Two Student Conservation Association interns once again assisted Humboldt Bay NWR at an environmental education conference in Humboldt County. Teachers and their classes learned about conservation and the environment through activities led by these interns.

Volunteers from the California Coast Clean-up event, Intel, Sierra Singles, Community Impact, and the Boys Ranch worked hard to improve the Environmental Education Center's butterfly garden this year. Volunteers included a diverse mixture of people, including all ages of kids and adults. Many of the volunteers who came for the Butterfly Garden Planting were the same volunteers who had helped prepare for the garden in 1994. They removed invasive non-native vegetation, spread mulch, and planted over 100 native plants that are attractive to California butterflies. They then bought and installed drip irrigation and built an additional handicap accessible trail through the butterfly garden. The butterfly garden is now well established, and will provide a unique opportunity for participants in the weekday field trip programs and the weekend public interpretive programs to investigate the importance of preserving and protecting native habitat.

Volunteer Harry Sanders was invaluable in continuing to develop the Native Plant Nursery. A retired chemist and University of California Master Gardener, this quintessential volunteer cultivated 6,000 individual plants of almost 200 native species. He organized two plant sales and symposia, each raising thousands of dollars for habitat restoration. The Butterfly Garden could not have been such a success without his efforts in designing the garden, propagating the appropriate plants, and establishing a drip-irrigation system.

A vital part of the Refuge's personnel is the Student Conservation Association (SCA) interns. SCA is a worldwide organization that places people for a 3- to 4-month period at various refuges and parks throughout the world so they can gain experience in careers in conservation. This past year there were 12 SCA interns who contributed 40 hours a week for at least 16 weeks. One intern was asked to stay longer due to her obvious commitment and acquired expertise with resource management, and so stayed about six months. In exchange for her full-time volunteer service, the Refuge provided her with housing and a small subsistence stipend of \$75.00 per week.

Six of the SCA interns, Caroline Nielands, Alice Charlebois, Michele Hannon, Vanna Boccadori, Bonnie Clayton, and Melissa Witte worked with the Wildlife Biologists, assisting with endangered California clapper rail and predator surveys, habitat restoration and snowy plover monitoring and protection activities.

Six other interns, Julie Busa, Jennifer Carman, Katy Goodman, Caroline Bennett, Sarah Williams, and Dev Signer were just as vital to the Environmental Education Program. These SCA interns were essential in assisting with teacher orientations, field trips, classroom presentations, Marsh-In Camp and the Junior Naturalists Program. Interns also worked on the development of the *Trekking the Refuge* program, and the continuing improvement of the *Wetland Round-Up* program, developing new field trip activities and teaching aids.

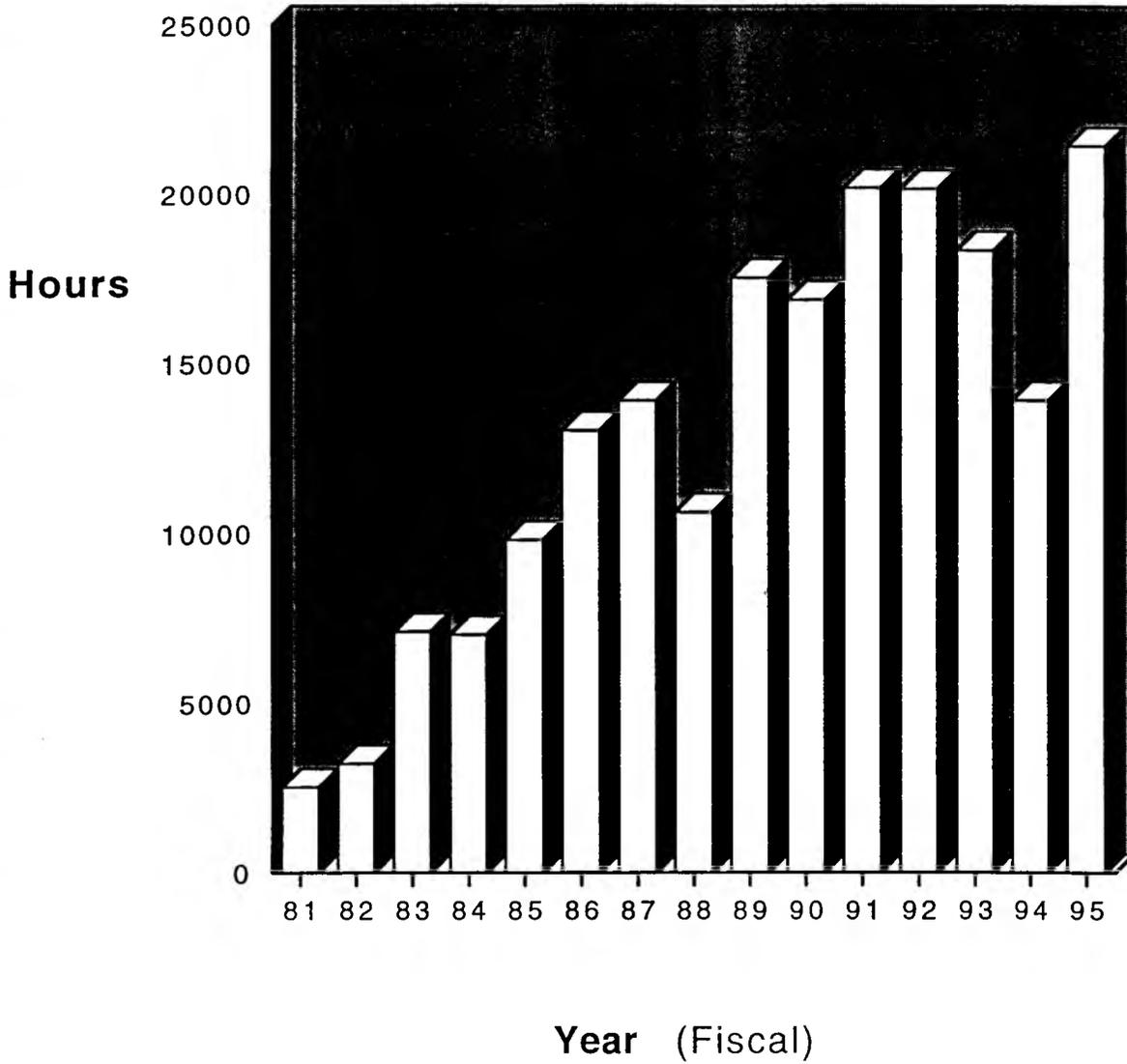
In June, Refuge volunteers were recognized for their efforts at the Annual Volunteer Picnic and Recognition Ceremony (for calendar year 1994). Chicken and steaks were barbecued by staff and everyone else brought a dish to share. All volunteers received a Certificate of Appreciation, and some also received gifts such as caps, pen sets, photographs, or plaques depending upon how many hours they had volunteered. In addition, volunteers who had accumulated hours in increments of 500 and 1000 were recognized with special pins and plaques. Special recognition was given to Arthur Wellens who reached the 5000 hour mark! Volunteer of the Year honors went to Harry Sanders who contributed 1111.5 hours to the Refuge!

The Refuge Volunteers are highly committed to their community. Many of our Volunteers also volunteer some of their time with other organizations and groups. In December, a group of twenty volunteers and staff members assisted a local public television station with a pledge drive. It was a wonderful opportunity for all of us to help give a little back to others in the community.

One advantage of the location of this urban wildlife refuge is that there is a large population base located nearby that serves as a vast reservoir of potential volunteer candidates. We recruit new volunteers through displays at various off-site fairs, word-of-mouth advertising, and articles in the quarterly *Tideline* newsletter. An application which describes the volunteer program is also available in the Visitor Center. We conducted three 20-hour training sessions for new volunteers in 1995.

VOLUNTEER HOURS

San Francisco Bay National Wildlife Refuge Complex



NOTE: Farallon and Humboldt Bay NWRs
Hours not included



Volunteer Nancy McGihon hard at work taking reservations for tours of Drawbridge



Folks from Intel, Inc. worked hard to make the Environmental Education Center butterfly garden a success.



Community Impact Volunteers spread a thick layer of mulch, donated by Niles Tree Service, in the Butterfly Garden



A member of the future generation learns from Mom about the importance of plants to wildlife

H. PUBLIC USE

H.1. General Public Use

San Francisco Bay National Wildlife Refuge serves a dense, local population of over 7 million people. It is an ideal place for Bay area urbanites to visit a relatively unspoiled area, enjoy the local wildlife and learn about nature, conservation and wildlife management.

The Public Use Division is composed of three sub-divisions. The Environmental Education Program teaches conservation and wildlife values to children. The Interpretation and Outreach Program explains natural history and salt marsh ecology to families and other audiences on and off the Refuge in a wide variety of media, and generates public recognition of the National Wildlife Refuge System. The Law Enforcement program, which became part of the Public Use Division in October, enforces laws and provides for public safety.

The Public Use Program includes Refuge signage responsibilities, development of exhibits, construction of visitor facilities, writing of brochures and other publications, administration of an active volunteer program, and advancement of general community relations and involvement.

During 1995, 281,151 people visited the Refuge. Thirty-seven thousand one hundred fifty people stopped in at the Visitor Center, and 2,752 attended interpretive programs, special events, artist receptions and other events. Nine thousand two hundred students, teachers, and other adult leaders attended outdoor classroom activities at the Environmental Education Center in Alviso or the Visitor Center in Fremont. Over 51,608 visitors received our self-guided interpretive messages when they read our wayside exhibits.

The Visitor Center in Fremont was closed on Mondays as the result of a directive from the Washington Office. In addition, it was closed all Federal holidays due to limited funding for staff. The trails and fishing pier remained open from 7:00 a.m. to sunset every day except New Year's Day, Thanksgiving and Christmas.

The Weekend Interpretive Program at the Environmental Education Center (EEC) was partially funded by the City of San Jose and the Santa Clara County Nonpoint Source Pollution Control Program (part of the Santa Clara Valley Water District) through September. Beginning in October, the Santa Clara County Nonpoint Source Pollution Control Program assumed full funding, and expanded the funding in order to develop the interpretive program further. The Interpretive Specialist thus changed from a part-time to a full-time temporary employee, who is now officially an employee of the San Francisco Bay Wildlife Society, the Refuges cooperative association, working with the San Francisco Bay National Wildlife Refuge.

The Center is open and staffed from 10 AM to 5 PM on Saturdays and Sundays. General public use increased during 1995, with a good turn out by the public for trail usage and nature walks. The number of drop-in visitors at the EEC weekend program increased 24% this year to a total of 4,992 visitors. The Center is now used by general

public drop-in visitors, organized school groups, Boy and Girl Scouts, workshop participants, field trip orientation participants, summer camp children, and volunteers in training.

Most of our 1995 visitors participated in recreational activities other than formal programs at one of the two centers. The public fishing area (6,000 users) , trails (93,717 users), sloughs (3,900 duck hunters in boats, and 195 wildlife oriented recreational boaters), and other public areas were used by 106,837 visitors. Many of these people were contacted in the field by Refuge volunteers on patrol.

H.2. Field Trips (Outdoor Classrooms) - Students

The Refuge's Environmental Education Program (EEP) is administered at both the Environmental Education Center in Alviso and the Visitor Center in Fremont by Environmental Education Specialists (EES). Once again, the Refuge offered exciting field trip programs for students.

The *Wetland Round-Up* (K-8 grades) and *Trekking the Refuge* (3-6 grades) field trip program formats allow for small groups of students to rotate from one learning station to the next throughout the day. As a result, students and accompanying adults spend an entire school day learning about the importance of the resource management objectives of the Refuge: preserving and protecting significant wildlife habitat in the South Bay, protecting threatened and endangered species, and protecting migratory birds.

Before bringing a group to one of our field trip programs, at least one educator and one other adult must attend a 4-hour field trip orientation workshop. Other adults from a group are encouraged to attend these workshops too. Upon completion of a field trip orientation workshop, an educator has all the necessary tools to plan and conduct an exciting field trip.

A high adult-to-student ratio (2 adults to every 10 students) is required. This ratio allows one set of adults to be learning station leaders and the other set to be chaperones who also assist the station leaders. The learning experience is enhanced by the small group setting and students are taught more effectively because of individual attention.

A *Wetland Round-Up* field trip includes an opening slide show for the students conducted by a volunteer (usually a Student Conservation Association (SCA) intern) while a staff person orients the parents to the lay of the land. Then the students divide into small groups and begin activities at different learning stations, rotating from station to station during the course of the day. One adult is a small-group chaperone, moving with his/her group to each learning station. The other adult teaches an activity at a learning station, repeating the activity for each group during the field trip day. The educator acts as a "floater", available to help parent leaders with their learning station activities, answer field trip logistic questions and take care of any student emergency. A closing activity at the field trip's conclusion summarizes topics and ties together any loose ends to make the day's visit more memorable for the children.

The *Wetland Round-Up* field trip requires the help of a staff person and volunteer in conducting the field trip opening and closing activities, showing the adult leaders and chaperones the sites where the learning-station rotation activities are to be conducted, demonstrating the first rotation of an activity, and overseeing the flow of the field trip with the educator in charge. The educators select their own field trip activities and pre- and post-trip activities from the *Salt Marsh Manual - an Educator's Guide*. A typical field trip has six learning stations (hands-on, environmental education activities are conducted at these stations) and the group consists of two educators, sixty five students, six learning station leaders, and six to eight chaperones.

Wetland Round-Up Sample Schedule

9:00	Bus arrives at the refuge
9:15 - 9:45	Habitat slide show - staff or volunteer (SCA) Adult orientation - staff or volunteer (SCA)
9:45 - 10:15	Station #1 (Mud Studies)
10:15 - 10:45	Station #2 (Beaks & Feet)
10:45 - 11:15	Station #3 (Where Have All The Wetlands Gone?)
11:15 - 11:45	Station #4 (Wetland Water Café)
11:45 - 12:10	Lunch
12:10 - 12:40	Station #5 (Salinity Testing)
12:40 - 1:10	Station #6 (Marsh Walk With Mini-Expedition)
1:10 - 1:30	Closing with students - staff or volunteer (SCA) Clean-up by adults
1:30	Departure

The *Trekking The Refuge* field trips differ from the *Wetland Round-Up* field trips in the amount of staff time needed and number of students allowed on each field trip. For *Trekking The Refuge* field trips, the teacher checks out day packs filled with investigative equipment. One staff person hands out the activity equipment day packs at the beginning of the field trip and assists the adults in cleaning and counting the equipment at the end of the field trip. A maximum of 35 students (one class size) is allowed on each field trip. This policy limits the impact on the habitats, especially at the Visitor Center where the whole class is trekking a loop trail for part of the day.

Trekking the Refuge at the VC Sample Schedule

9:00	Bus arrives at the refuge
9:15 - 9:30	Bathroom Break at Visitor Center for students 3 adults pick up and count the equipment
9:30 - 9:50	Opening Discussion led by educator <i>The Bay Begins at Your Front Door</i>
9:50 - 10:40	Trail Trekkers (whole group hike)

10:40 - 11:10	Station #1 (Salt Marsh Safari)
11:10 - 11:40	Station #2 (Salt Pond Private Eye)
11:40 - 12:10	Lunch
12:10 - 12:40	Station #3 (Salt Marsh Safari)
12:40 - 1:10	Closing Discussion led by educator <i>Wetland Wrap-Up</i>
	3 adults return and clean equipment
1:15	Departure

The on-site field trip activities have been pre-selected by the EE staff. A pre-visit packet, checked out from our lending library, is mailed to the teacher two weeks before the field trip. It contains a slide show, a video, laminated posters, and laminated plant and animal pictures was designed to complement the *Trekking the Refuge* guide.

During 1995, a grant for \$5000 was awarded to the San Francisco Bay Wildlife Society (the refuge's cooperating association) from the Environmental Protection Agency in order to hire a contractor to begin the Trekking the Refuge program at the Environmental Education Center. Carol Hankermeyer, a former EE intern was hired to help with implementation of the program. EE specialists Fran McTamaney and Sandy Spakoff, and Carol Hankermeyer wrote the first draft of the guide, conducted one pilot orientation, revised the guide based on teacher recommendations and observed two pilot field trips in the fall of 1995.

Trekking the Refuge at the EEC Sample Schedule

9:00	Bus arrives at the refuge	
9:15	4 adults pick up and count the equipment	
	Opening Discussion: <i>The Bay Begins at Your Front Door</i> , led by educator	
9:45	Educator divides students into 4 groups - they are combined such that:	
	Students in groups 1 & 2 are one group	Students split into two groups groups 3 & 4 are separate
9:50	Station #1: Discovery Walk (80 minutes)	group 3 is at Station #2 (40 min.) group 4 is at Station #3 (40 min.)
10:30	Station #1: Discovery Walk (continued)	group 3 is at Station #3 (40 min.) group 4 is at Station #2 (40 min.)
11:10	Lunch at Pavilion	
	Students split into two groups groups 1 & 2 are now separate	Groups 3 & 4 are now one group

11:40	group 1 is at Station #2 group 2 is at Station #3	Station #1: Discovery Walk (80 minutes)
12:20	group 1 is at Station #3 group 2 is at Station #2	Station #1: Discovery Walk (continued)
1:00	Closing Discussion: <i>Wetland Wrap-Up</i> , led by educator 4 adults return and clean equipment	
1:30	Departure	

With only one environmental education specialist stationed at the Education Center and only one at the Visitor Center, the high quality of the field trip program and the number of students served would not be possible without the help of Student Conservation Association interns and a few dedicated volunteers.

The volunteers and SCA interns learn the basics of the *Wetland Round-Up* field trip program and lead the first rotation of a particular activity for each field trip. In addition, they conduct opening and closing presentations, and provide support to educators and parent leaders by answering any questions they have about conducting activities at the learning stations. When not busy with visiting school groups, the interns and some volunteers help the staff with special projects, such as designing activity props, writing closing activities, conducting pre-field trip slide show presentations, and developing new field trip activities, which enhance the educational experience for the students.

An Environmental Education Plan guides the Environmental Education Program . This Plan provides a direction for the EE Program and ensures implementation of the Plan's components as time and staff availability allows. The Plan is up-dated in the spring and fall of each year.

Resource Management Objective sheets show the connection between field trip activities, student behavior and the Refuge's resource management objectives and issues. During field trip orientations, educators and parents are introduced to our resource management objectives. Every activity that is developed relates to the Refuge's resource management objectives and a specific resource management issue, states what the Refuge staff is doing to resolve the issue, and gives ideas of what students can do to help the staff revolve the issue.

Reservations for the field trips are taken twice a year. On the first day of reservations we took calls from 4:00pm to 7:00pm, to allow teachers time to get out of school and call us in the afternoon. Reservations for the Winter and Spring session, conducted February 14 through July 5, began on December 12, 1994. Reservations for the Fall session, conducted October 17 through December 14, opened on September 11, 1994. Using this type of booking schedule, we had minimal field trip cancellations.

Adding the *Wetland Round-Up*, *Trekking the Refuge*, and "non-traditional" field trips from both the VC and EEC gives us a grand total of 6,022 students and 1,698 educators, volunteer leaders, and chaperones participating in educator-led field trips to the refuge in 1995.

Environmental Education Center Field Trips - Most of the groups using the EEC for a field trip participated in the *Wetland Round-Up* field trip program. 1,787 students and 71 educators, and 421 volunteer leaders and chaperones visited the site on this type of educator-led field trip. Attendance numbers were considerably reduced because of building construction which included remodeling the offices in the EEC. Initially construction was to begin late summer and no classes were scheduled for the fall semester; however, actual construction did not start until November.

The EEC was also used by various student groups not participating in the *Wetland Round-Up* field trip program. 783 students, 36 educators and 103 volunteer leaders made use of the site for other educational activities such as docent-led field trips (conducted by non-profit organizations), teacher training, and scientific study (high school - college level).

The combined totals for usage by all education groups for 1995 are as follows: 2,570 students, 107 educators, 524 volunteer leaders and chaperones.

For the ninth consecutive year, there was a greater demand for the *Wetland Round-Up* field trip program than the staff was able to meet. With the exception of groups such as Santa Clara Audubon Society, Youth Science Institute and Environmental Volunteers of Palo Alto who use the site requiring only field trip equipment and no staff support, no double bookings were accepted. In the winter/spring, classes were placed on a waiting list and only three of those groups were given dates for field trips.

Construction of a new outdoor pavilion was started during the fall. The pavilion was patterned after the one at the Visitor Center and was built mostly with funds collected from area businesses and charitable organizations, over a period of two years, by the Peninsula Open Space Trust (POST) and Refuge employees and volunteers. This new pavilion will be used for *Trekking the Refuge* field trips and, when classes are not present, for other activities, weekend visitors, and birding groups. The EEC will now be able to run two separate groups at a time, one inside the main building and one in the pavilion.

Visitor Center Field Trips - The *Wetland Round-Up* field trip program at the Visitor Center completed its ninth year at the end of 1995. A grand total of 2,771 students, 136 educators, and 744 volunteer leaders participated in *Wetland Round-Up* field trips.

At the VC, a pavilion and an old, former pump house serve as the hub for the daily field trip program. The pavilion, completed in 1992, is an important building for the *Wetland Round-Up* field trips; field trip opening and closing activities are conducted in the pavilion. During 1995, a beautiful mural depicting the six endangered species that occur on the refuge was added to the Pavilion. A refuge volunteer donated the money to hire the artist.

In the past, there has been a greater demand for the *Wetland Round-Up* field trip program than the staff was able to meet. Long waiting lists existed and many classes were turned away. Beginning in January of 1995, a new field trip program designed to allow double bookings was fully implemented. The *Trekking the Refuge* field trip program was piloted during 1993 and 1994. *Trekking the Refuge* field trips allow for double bookings at the VC because they take place in a different area than the *Wetland Round-Up* field trips and they require minimal staff participation. *Trekking the Refuge* takes place on the Tidelands Trail, a 1 mile loop, with a maximum of 35 students at a time. The program is designed for grades 3-6. These field trips are run entirely by teachers. Educators lead the opening and closing activities with the entire class, and lead the class on a 45-minute trail walk guided by observation questions in a bingo style format. Educators recruit adult leaders to lead and chaperone three pre-selected, learning station rotation activities. All of the needed equipment for the opening and closing activities and station rotation activities is in day packs that the educators check-out and carry with them. There were 28 *Trekking the Refuge* field trips in 1995, with 28 educators, 159 leaders, and 681 students participating. (For descriptions of these field trips, see section H.2 Field Trips.)

Adding together the *Wetland Round-Up* field trips and *Trekking the Refuge* field trips gives us a grand total of 3,452 students, 164 educators, and 903 leaders participating in educator led field trips at the Visitor Center.

Summer Day Camps -- Day camps for local children were conducted during the month of June at both the Environmental Education Center and the Visitor Center. The Refuge offered the camps free of charge. The two on-site EE Specialists cooperatively designed, planned and conducted both the Marsh-In camp at the EEC and the Junior Naturalist camp at the VC. The two environmental education interns assisted by adapting activities, making props, and setting up equipment. The interns, along with several volunteer leaders, enthusiastically led the campers through a variety of activities that included simulation games, guided imageries, wildlife observations, art projects, and share circles. There was a combination of large group and small group activities, with some amount of time spent each day at each small group's special spot. While at their special spot, campers had the chance to plan a skit, which were performed during the Thursday evening program.

The theme for 1995, *Trails Through Time* focused on how the San Francisco Bay area has changed through the years. It was the intent that, through environmental education, local children would become aware of the past events that helped shape the area in which they live today. Each day focused on a different time period; the campers traveled via "time machine". Activities ranged from how the landscape was shaped in prehistoric times, to how the Ohlone Indians used the Bay, to the present situation of the wetlands around the San Francisco Bay, to what students can do to keep the Bay healthy. A field trip to Los Trancos Earthquake Trail to see the San Andreas Fault was the highlight of the week. The week culminated in the planting of native plants, a watering ceremony, and a formal graduation.

Marsh-In Camp originated with the intent of building rapport with the children living in the local community of Alviso. Keeping with this philosophy, the fourteenth annual Marsh-In summer day camp was held for one session, Monday, June 25 through

Friday, June 29. The camp was attended by twenty children; five children going into grades 1-3 and fifteen children going into grades 4-7. This was the first year that younger children (grades 1-3) attended. Whole-group activities were designed to be appropriate for children of all ages. Small-group activities were designed for either older or younger children. For example: at Los Trancos Earthquake Trail younger children went on a short loop trail while older children went on a longer, more strenuous hike. Activities were led by a group of zealous volunteers, consisting of two SCA interns and several refuge volunteers. The combination of enthusiasm and high leader-to-camper ratio allowed for the campers to receive a good amount of individual attention.

This was the ninth year of the five-day program with an overnight session. (Younger students did not participate in the overnight session.) The camp was a great success. As a result of the summer camp program the children living in Alviso have an increased awareness of the many factors that impact the habitats of the refuge. Additionally, young persons who have participated in the summer programs have developed a greater sense of stewardship for the EEC.

Junior Naturalist Camp provides children in the South Bay an opportunity to learn more about nature at the Refuge. Because of the popularity of the program, children must apply by sending a letter stating the reasons they want to become Junior Naturalists; this activity reduces the number of applicants. To ensure that the same children don't attend year after year, while others are turned away, preference is given to first-time participants. Camp was held for one week from June 19 to June 23, for students entering 3rd, 4th, 5th, and 6th grades. The camp was attended by twenty-five children. Whole-group and small-group activities were led by two interns and seven refuge volunteers, five of which were junior high or high school students (three were former Junior Naturalists), and two of which were adult volunteers. One former Junior Naturalist has participated in the program as a camper, junior leader, and leader for 8 years and is now a senior in high school with plans to go to college and major in a natural resources field.



SCA intern Julie Busa leads a closing activity for a wetland Round-up field trip



"Animal On My Back" was a bit hit at Junior Naturalist's Summer Camp



Jr. Naturalists discover "Who Dirtied The Water"



Jr. Naturalists work on their time-traveling name tags with refuge volunteer Caroline Bennett

H.3. Field Trips (Outdoor Classrooms) - Teachers

Field Trips -- In the San Francisco Bay Area, where many environmental education facilities and programs are available for educators to choose from, the Refuge Environmental Education Program is unique. We provide a facility where educators lead their own field trips. As in previous years, we conducted training sessions for educators (teachers, youth leaders and outdoor recreation leaders) and adult learning station leaders (parents, aides, grandparents, etc.) interested in participating in the Refuge's educator-led field trip programs. Following the training and guidance we provide, educators plan their field trip, prepare the students and adult leaders and conduct the field trip. By having educators fully responsible and highly involved in their field trip, they are more likely to integrate the classroom curriculum with their field trip activities, providing students with a learning environment which extends into the classroom beyond the day spent on the Refuge. As a result, students achieve a more meaningful, in-depth experience. Over 7,700 students, their educators and parents went through the field trip program.

Warwick Elementary School, which has adopted the refuge, worked closely with the Visitor Center Environmental Education Specialist throughout the year. Teachers and parents attended workshops, and students came on field trips throughout the year. During National Wildlife Refuges Week, a special presentation was put on at the school for 250 students. The presentation included a puppet show and skit, starring Salty, the salt marsh harvest mouse, and Cali, the California clapper rail. This presentation was also performed at two other schools. When Secretary of the Interior Bruce Babbitt conducted a press conference at the Refuge, the principal and science coordinator at Warwick School, along with a teacher and 5 students attended and had the chance to meet the Secretary. In December of 1995, Warwick students produced the first edition of *Bay Tidings*, a newsletter about the San Francisco Bay, featuring articles and artwork by Warwick students. A copy of the newsletter can be found at the back of the narrative.

Field Trip Orientations, Wetland Round-Up

The majority of each field trip orientation is spent on background information and learning how to lead the activities found in the *Salt Marsh Manual - an Educator's Guide!* The logistics of planning a field trip, as well as rules and regulations, are also discussed during the workshops. By the end of the orientation, the educators and parents understand that we are a resource management agency, the identity of our agency, and that each field trip activity is designed to meet the Refuge's resource management objectives. The staff is available for individual planning sessions should educators require assistance in planning their trips. A total of 5 Field Trip Orientation Workshops were offered at the Environmental Education Center in Alviso with 90 educators/leaders participating. Five educators returned for a one-hour planning session to finalize the details of their field trip. A total of 8 Orientations were held at the Visitor Center in Fremont with 138 educators/leaders being trained and 5 educators returning for one-hour planning sessions. The confidence gained by educators and volunteer leaders at these orientations culminates in a successful field trip.

We continue to distribute the *Salt Marsh Manual - an Educator's Guide!* The 220-page guide was designed to facilitate discovery, learning, and enjoyment of field trips to the

San Francisco Bay National Wildlife Refuge and is now in its third revised edition. It contains background information, area maps, planning and group management hints, classroom and on-site activities, and additional resource information. The activities in this guide are for grades K-8. The Educator's Guide is available free of charge to all educators and group leaders who attend a *Wetland Round-Up* Field Trip Orientation Workshop. Revisions on the 4th edition began in the fall of 1994 and continued throughout 1995. New classroom and field trip activities were tested with teachers and students in order to refine them and make sure they were user-friendly. New field trip activities were observed by refuge staff and classroom activities were mailed out to educators with requests for evaluation. The 4th edition is expected to be done in the Spring of 1996.

Field Trip Orientations , Trekking the Refuge

Visitor Center Trekking the Refuge Orientations -- During the field trip orientations at the Visitor Center, the educator and parents learn how to conduct pre-selected openings and closings, a trail walk, and three learning station rotation activities. The logistics of planning a field trip, as well as background information and rules and regulations, are also discussed during the workshops. By the end of the orientation, the educators and parents understand that we are a resource management agency, the identity of our agency, and that each field trip activity is designed to meet the Refuge's resource management objectives. Because *Trekking the Refuge* is an entirely educator-led field trip, the workshop is essential to the success of the field trip. In 1995, 7 orientations were held with 57 educators and adult leaders attending orientations.

The first edition of the *Trekking the Refuge* Educator's Guide for the Visitor Center includes an introduction to the Refuge, background information on habitats and plants and animals, pre-visit preparation hints, classroom activities with resource management objective and issue information, and on-site activities (the opening and closing activities, a trail walk, and the three learning station rotation activities). A lending library with materials such as a slide show, a video, laminated posters, and laminated plant and animals pictures complements the *Trekking the Refuge* guide.

Environmental Education Center Trekking the Refuge Orientation Workshops -- During the field trip orientation workshops at the Environmental Center, the educator and parents learn how to conduct pre-selected openings, closings, a Discovery walk and four other learning station rotation activities. The logistics of planning a field trip, as well as background information, policies and rules are also discussed during the workshops. By the end of the orientation, the educators and parents understand that we are a resource management agency, the identity of our agency, and that each field trip activity is designed to meet the Refuge's resource management objectives. Because *Trekking the Refuge* is an entirely educator-led field trip, participation in the orientation workshop is essential to the success of the field trip. In 1995 the staff at the EEC piloted one orientation workshop with 3 educators and 2 adult leaders participating.

The first draft of the *Trekking the Refuge* Educator's Guide for the Environmental Education Center includes an introduction to the Refuge, background information on habitats and plants and animals, pre-visit preparation hints, classroom activities with

resource management objective and issue information, and on-site activities (the opening and closing activities, a discovery walk, and four other learning station rotation activities). A pre-visit packet, with materials such as a slide show, a video, laminated posters, and laminated plant and animals pictures, complements the *Trekking the Refuge* guide.

Educational Resources -- The Audio Visual Lending Library for the Environmental Education Program exists at both sites. VHS videos are available for educators to check out for 2 to 3 week periods.

It's Wet, It's Wild, It's Water! is an up-to-date look at water conservation and pollution prevention issues for South Bay area students in grades three through eight. The viewer learns where water comes from and where it goes by traveling to the Sacramento-San Joaquin River Delta and the San José/Santa Clara Water Pollution Control Plant with student reporters. The video underscores our connection to our watershed, with emphasis on how students can actively prevent water pollution and help protect our environment.

Who Did the Owl Eat? depicts a barn owl's hunting and eating habits, regurgitation of an owl pellet and directions on how to dissect a pellet. Appropriate for grades first through sixth, the video is accompanied by charts, curriculum, and script. Educators are encouraged to copy the tape and charts to keep in their school curriculum library for future use. Other refuges have copied the tape to lend out to educators.

The 25-minute video about the San Francisco Bay and Delta, *Secrets of the Bay*, shows the history of the bay and its sometimes conflicting interests. This video is appropriate for fourth grade through college.

Fabulous Wetlands is an 8-minute video that takes a humorous, yet informative look at wetlands -- what they are, how important they are, and what we can do to protect them. Perfect for pre-field trip preparation, this video is appropriate for third grade through high school.

A Home for Pearl and accompanying guide is a video that teaches about wildlife habitats. It is divided into four parts: two 15-minute segments and two 20-minute segments. Each can be viewed as a separate unit incorporating supplementary activities provided in the guide. It is appropriate for first through sixth grades.

Do your Part! is a 19-minute video featuring students teaching each other what they can do to help preserve the wetlands. It is appropriate for grades 3-8.

In Celebration of America's Wildlife is a 28-minute video that features success stories in wildlife conservation. It is appropriate for grades four through adult.

The Surfer, the Garbageman, and the Lady in the Sky, is a 15-minute video featuring a high school student sleeping in class and dreaming about pollution of soil, air, and water, and ways to prevent pollution. It is a fun, fast-paced video for grades 4-8.

Into the Wild is a video divided into three segments, each focusing on one endangered species and the efforts being undertaken to help the species. The featured species are: whooping cranes (12 minutes), red wolves (12 minutes), and whales (16 minutes). recommended for grades 3-6.

Tinka's Planet is a 12-minute video that introduces children to the need for recycling. It is very good for grades K-3.

In addition to classroom videos, several training videos are available through the Audio-Visual Lending Library. Educators can show the videos to adult leaders as training for an upcoming field trip. These training videos consist of background and "how to" information and footage of the activity during an actual field trip.

- *Wetland Round-Up* Field Trips at the Visitor Center
- Brine Shrimp Lab at the Environmental Education Center
- Brine Shrimp Lab at the Visitor Center
- Mud Creature Study at the Visitor Center.

Educator Workshops -- We conducted several environmental education workshops in 1995.

Two workshops about watersheds and wetlands were canceled due to lack of enrollment. The workshops were scheduled late in the school year and similar ones were offered earlier that year.

Palo Alto Unified School District held a *Staff Development Day* at the Visitor Center on September 1. Twenty five teachers participated in the workshop. The purpose of the day was to introduce 3rd grade Palo Alto Unified teachers to a new curriculum guide developed by the District's Science Coordinator and an additional 3 classroom teachers. The curriculum, *Baylands*, was heavily adapted from the Refuge's *Salt Marsh Manual* and *Trekking the Refuge*. The curriculum guide also included a slide show copied from refuge slides. During the day, classroom and field trip activities from *Baylands* were demonstrated for the teachers. The environmental education specialist at the Visitor Center hosted the event, led one of the activities, and gave an overview of the refuge's EE programs. After the staff development day, many of the teachers brought their third grade classes on field trips to the refuge.

Three environmental education specialists and two environmental education interns attended the San Francisco Estuary Institute's annual environmental education conference. The theme for the 1995 conference was *Teaching About Watersheds*. The conference was split into two main parts. During the morning, a number of renowned educators spoke to the entire group, offering theories, scientific information, stories, and practical advice on teaching about watersheds. In the afternoon, participants chose from a wide array of workshops. Two environmental education specialists from the refuge led a 1 hour 15 minute workshop entitled "From the Mountains to the Bay: Hands-On Activities for Tracing Water's Course". Approximately 20 people attended the workshop. Activities demonstrated included Mapping Your Watershed, Wetland in a Pan, and Who Dirtied the Water?

In association with the San Francisco Estuary Institute's conference, two environmental education specialists conducted a field trip to the refuge and led a workshop entitled "Journey Through the Alameda Creek Watershed". The goal of the workshop was to show how different parts of a watershed are interrelated and the importance of protecting all parts of a watershed. Twelve educators participated in the workshop, which lasted from 9:00 am to 3:00pm. The day started with 2 classroom activities: Creeks Begin at Home and Oil and Water Don't Mix. The group then explored the physical and biological aspects of two different sites: Avocet Marsh and Alameda Creek.

Educational Courses, Programs, and Organizations-- San Francisco Bay NWR EE personnel were involved in varying degrees with the following courses and programs.

National Environmental Education Course -- (Office of Training and Education)
Public Outreach, Advocacy and Education: Overview and Planning

This course was offered by the U.S. Fish & Wildlife Service, Office of Training and Education at Laurel, Maryland in May and November of 1995. The course was open to all interested Service personnel, and was attended by supervisors, refuge managers, project leaders, and administrative personnel from all levels of the Service.

The goal of the course was to provide an awareness of the value of education and outreach in the Fish & Wildlife Service. Participants learned about education and outreach strategies and how these strategies could help achieve resource management objectives of the Service. Fran McTamaney presented the session on *Strategies That Work!- San Francisco Bay National Wildlife Refuge*. The main focus of her session was showing how each activity conducted at the Refuge met a resource management objective (RMO). A work sheet used in the session, helped participants to identify their RMOs .

National Environmental Education Course -- (Office of Training and Education)
Working With Children and Their Leaders

The objective of the course is to work with formal and non-formal education groups in addressing Service issues and encouraging environmentally responsible behavior by young people. Service employees are introduced to general education practices and encouraged to work with local schools and youth organizations in project development. The course was conducted in July of 1995. Fran McTamaney, co-leader of this course, helped design and conduct the course with a team of other FWS personnel throughout the Service under the guidance of Britt Slattery, course coordinator, from NETC. Fran and another team member conducted the session on how to use the new planning and evaluation model. In addition, each member of the team acted as a small group project planning coach throughout the course. Chris Parsons, a consultant who designs planning and evaluation models tailored a model for this course. 22 participants attended the course, some were from other resource management agencies. The overall course and planning and evaluation model were rated as excellent by the participants. Sandy Spakoff, EE Specialist at the EEC, co-lead and designed the on-site sessions "Instructional Materials" and "Leader Training" and was a small group project planning coach. Amy Hutzell, EE Specialist at the VC, attended the course and presented the on-site model program session "Working With

Leaders" using the DESFBNWR "Trekking the Refuge" field trip program at the VC as the model program example.

"Linking Girls to the Land Workshop: Building Partnerships Between Girl Scouts and Federal Natural Resource Agencies" - (Refuges and Wildlife, Washington, DC.)

U.S. Fish & Wildlife Service gave financial and personnel support to a nation-wide workshop, "Linking Girls to the Land: Building partnerships Between Girl Scouts and Federal Natural Resource Agencies" on December 7 - 11, 1995 at Camp Joe Scherman in the San Jacinto Mountains in southern California, at a training center owned by Orange County Girl Scout Council. Forty-one Girl Scout staff members and adult volunteers from 28 states attended, from Alaska to Maine to Puerto Rico.

The workshop was co-sponsored by Girl Scouts of the U.S.A. and the Fish and Wildlife Service, Forest Service, National Park Service, and Bureau of Land Management. The workshop program fee and some travel costs were subsidized by funds from the federal natural resource agencies. FWS contributed \$6,000. Fran McTamane, Environmental Education Coordinator for the complex represented the Service as an instructor and member of the planning team. The FWS publication unit sent copies for each participant of some 17 publications that included a "Home for pearl" and "Give Water a Hand" instructional guides, posters, Junior Duck Stamp program and information about National Wildlife Refuges. Region 1 Law Enforcement sent copies of "Facts About Federal Wildlife Laws". Environmental education resources displayed and/or demonstrated at the workshop included a CARGO box, Minnesota Valley NWR Wetland Trunk, Region 4's Scientist in the Classroom on Endangered Species and Wetlands, Chesapeake Bay Field Office's 3D Watershed model of the Bay, and FWS's Human Resource Department's table top Career Display.

The "Linking Girls to the Land" training focused on agency missions, outdoor recreation, service projects, environmental education, and careers in the natural resources field. Agency instructors invited Girl Scouts to plan more outdoor recreation activities on Federal land, and to practice "leave on trace" and "tread lightly" outdoor practices. Service projects are central to the Girl Scout program at all age levels, and agency instructors and participants together outlined what makes successful volunteer service projects. The program included ways that troops and councils can work with existing Federal agency programs to learn about their relationships to natural ecosystems and opportunities for natural resource careers. Fran compiled a list of FWS regional and field environmental education contacts that can provide instructor guides, programs, patches and on-loan materials to girl scout councils and troops. (See list of contacts in the appendix)

Fran conducted presentations of agency programs, worked with individual participants about their ideas for using federal resource agencies as a resource for scout programs, and taught interpretive technique sessions during the workshop.

Each of the 41 participants designed and will implement a program cooperatively with a nearby Federal natural resource agency. Some of the FWS regional and field stations that will be working with these participants are Endangered Species Field Office, Asheville, NC; Juneau, AK; Montezum NWR, Seneca Falls, NY; DeSoto Bend NWR, Missouri Valley, IA; Las Vegas, NV; Sully's Hill NWR, Deires Lake, ND.

Although a representative from the San Francisco Bay Girl Scout Council could not attend this workshop, some of their girl scout leaders attended the Field Trip Orientation Workshop for "Trekking the Refuge" field trip program and will be conducting their field trip in May, 1996. In addition, Nancy Fries, the Refuge's volunteer coordinator is working on developing a patch for youth groups who perform an action about preserving or enhancing the bay's natural resources.

The next "Linking Girls to the Land" workshop is scheduled to occur in February, 1997 in the southeastern U.S. Girl Scouts of the U.S.A. have requested that Fran represent the Service at this workshop.

California Aquatic Science Education Consortium , California -- In 1990, a consortium of agencies, organizations, and citizen groups was established for the purpose of encouraging, supporting, and enhancing aquatic (fresh and marine) education programs for informal groups in the State of California. The initial formation of *The California Aquatic Science Education Consortium* was funded by a grant from the National Science Foundation. Five aquatic curriculum guides were developed: *Plastic Eliminators, Water Inspectors, Fresh Water Guardians, Wetland Protectors and Creek Watchers*. SFBNWR is a member of the Consortium and uses activities from these guides when conducting educator workshops and sessions for workshops on and off-site.

The Environmental Education Program Coordinator continued to serve on a curriculum development committee for the new *Grassland Resource Conservation District's Wetland Education Program*. The purpose of the program is to increase public awareness of our local wetlands and the integral part played by agricultural interest in establishing habitat for wildlife. The Center was completed in the fall of 1995 and accommodates school groups 9 months of the year. The EEP Coordinator reviewed a draft curriculum, provided information on relevant field trip and classroom activities, and gave suggestions for types of field equipment and sources for purchasing equipment.

A group of environmental educator in Santa Clara County have joined together to promote environmental education in the South Bay. The group is called the *Santa Clara Valley Environmental Partners* and is made up of nonprofits, local, state, and federal agencies, and teachers. Meetings of this group began in May of 1995. One of the projects is to create an annual environmental education fair for teachers beginning in spring of 1996. The purpose of the event is to let teachers know what environmental education programs and resources are available locally. The goal is to bring environmental educators and teachers together and create strong working relationships between the two. The EEP coordinator is a member of this group.

Another environmental education organization, *Midpeninsula Environmental Education Alliance (MEEA)*, was reactivated in June of 1995 after a dormancy of two years. Environmental education agencies and organizations located in Santa Clara and San Mateo counties are invited to join this informal group. the mission of this group is to provide a forum for collaboration among environmental educators to maximize resources and achieve common goals. The EEP coordinator is a member of this group.

The EEP coordinator reviewed the environmental education guide and helped to conduct the first field trip orientation workshops for the educator-led field trip program being initiated by a PG &E education specialist for the Discovery Trail at their Bear Valley Camp ground near Nevada City area. The Orientations were held on April 29 and 30, 1995 with 27 teachers in attendance. Teachers returned during May, June, September and October to conduct their field trips.



Fran McTamane presenting a session about the U.S. Fish and Wildlife Service at the "Link Girls to the Land" workshop

H.4. Interpretive Trails

The Refuge has two trails with interpretive wayside exhibits. These displays describe the habitat, the cultural history, the ecological dynamics and geology of the areas that visitors walk through. They are entertaining, easy to read, visible without being intrusive and serve as an important supplement to our interpretive effort.

The self-guided trails are especially important during hours when the Visitor Center is closed. Before 10 am, and from 5pm to sunset trail use is often heavy. Refuge volunteers patrol the trails, talking with visitors and providing more information to people as needed. They also pick up trash and make note of the wildlife they see.

The Refuge's main interpretive trail, the Tidelands Trail, is registered as a National Recreation Trail in the National Trails System.

Butterfly Garden -- We continued to improve the new native plant garden at the Environmental Education Center which was designed to attract butterflies, and demonstrate the connection between high quality habitat and abundant wildlife. The garden is utilized in the weekday field trip program and the weekend public interpretive program. It provides a unique opportunity to investigate the interactions of nature.

H.5. Interpretive Routes Nothing to report.

H.6. Interpretive Exhibits, Demonstrations, and Special Events

During 1995, 183,726 visitors participated in interpretive activities at the Refuge. Of these, 134,115 took advantage of our self-guided interpretive trail, viewed exhibits, or visited the Visitor Center or the Environmental Education Center to watch films or videos and look at the educational displays. The remaining 2,752 participated in the numerous naturalist-conducted programs such as walks, van tours, talks, slide presentations, astronomy programs, or bicycle trips.

Every day brings a steady stream of inquisitive Refuge visitors past our Visitor Center reception desk. On weekends, the Environmental Education Center also receives drop-in visitors. Our volunteers who staff the desk daily are knowledgeable and always willing to help out. We would not be able to present the variety of programs we do without them.

The natural history of the Refuge was well represented in our 1995 programs with topics such as salt march ecology, birds, seasonal wetlands, endangered species, edible plants, geology, water pollution, mammals, dinosaurs, native Americans, and astronomy. Our volunteer staff was quite active during 1995, giving 98% of our weekend public tours and interpretive programs. A number of programs of importance were given by local experts, including the geological history of the San Francisco Bay and the Endangered Species Act, and were well attended by the public. For complete descriptions of these programs, look in the calendar section of the *Tideline* newsletters included at the back of this narrative.

Our program audiences were as diverse as the program topics that were presented. Audubon chapters, day care centers, garden clubs, historical societies, scout troops, community groups, senior centers, teachers' associations, and college classes among many others, took advantage of the available programs. The greatest demand for naturalist-led activities, however, came from families.

As in past years, one of the most popular activities during 1995 were the tours of Drawbridge, an abandoned hunting and fishing community in a salt marsh setting. The dilapidated town stands as a reminder of the consequences of human destruction of the native environment. This was the theme as more than 450 people visited the area during tours offered on Saturdays from May through October. Other weekday and weekend tours were arranged by special request for walking clubs, photography groups, and other organized groups.

Throughout the year, staff members spoke to numerous civic, business, church, and social groups, and participated in career fairs for high school students providing nearby communities a service while disseminating information about the Refuge and its resources.

Many off-site events helped to increase recognition of the Refuge and its programs. Staff members and volunteers attended information booths at these events, where they distributed literature and in some cases led environmental education activities, reaching over 5,000 people. The Bay Area Environmental Education Resources Faire for K-12 educators, the Santa Clara Audubon Society Education Day, Berkeley Bay Day, and many other special events all provided opportunities for the Public Use staff and volunteers to reach out to the public.

National Wildlife Refuges Week -- During the celebration of National Wildlife Refuges Week, October 8 through 14, two environmental education specialists and two environmental education interns visited schools and gave presentations to students. The main goal of the visits was to inform students about San Francisco Bay NWR and to increase their awareness and knowledge of the salt marsh habitat and the endangered species of the salt marsh. In addition, the presentations provided an opportunity to advertise upcoming National Wildlife Refuges Week events, such as Shark Day, a Sing-Along, and the Native Plant Sale and Symposium. The presentations were given at three different schools, to a total of 745 students. The presentation began with 2 puppets, Salty, the salt marsh harvest mouse, and Cali, the California clapper rail, introducing the students to terms such as "wetlands", "habitats", and "endangered species". The students were then involved in a skit featuring a salt marsh food chain. When the marsh was destroyed, the plants and animals in the salt marsh food chain could no longer survive. Luckily, Super Citizen appeared and saved the marsh by creating a refuge! At the end, students were asked how they could be like Super Citizen.

National Wildlife Refuges Week was also celebrated at the Environmental Education Center for the first time. *Shark Night* was the special event of this celebration. Approximately 100 people participated. Visitors were thrilled to meet and get the autograph of S.J. Sharkie, the mascot of the San Jose Sharks. They were also excited to see the live sharks that the Marine Science Institute brought in a mobile aquarium,

and to see their special presentation on sharks of the San Francisco Bay. Many visitors enjoyed making shark hats and necklaces from paper plates, making commemorative buttons, and playing a scavenger hunt for shark facts. Some visitors also went on guided nature walks along the trails of the refuge, and played Endangered Species Jeopardy.

Redwood Environmental Education Fair -- Annually, environmental educators and volunteers from San Francisco Bay NWR prepare for and conduct the EE presentations and activities at the Redwood Environmental Education Fair in Humboldt County. In 1995, one Refuge EE Specialist and two Refuge interns participated, supporting the staff at Humboldt Bay NWR which does not have a public use staff. The fair was held on June 2, 1995. Four classes of approximately 30 students each attended the four refuge sessions. The students were all in fourth or fifth grade. Each session was 45 minutes long, which included a ten minute opening discussion, two 15 minute activities, and a five minute closing discussion.

The title of the session was "Refuges - They're for the Birds!" The staff person and interns led a discussion about wetland loss, the importance of wetlands for migratory birds, and the role of refuges in protecting wetlands for migratory birds. From the window of the room, Humboldt Bay NWR was pointed out to the students. The students then had the chance to taste pickleweed collected at the refuge and to see eelgrass, an important food for Black Brandt. The classes were then split into two groups of about 15 students each, to allow more personal contact with the students. Each group participated in both Not-So-Trivial Migratory Bird Pursuit (a Jeopardy! style game with questions about wetlands and migratory birds) and What's for Dinner? (a bird beak adaptation activity). A wrap-up discussion at the end focused on how students could help protect wetlands. The presentations met Humboldt NWR's resource management objective that promotes understanding of the importance of wetlands and the need to preserve and restore wetlands for migratory birds.

Throughout the year, staff members spoke to numerous civic, business, church, and social groups, providing nearby communities a service while disseminating information about the Refuge and its resources.

Bay Area Environmental Education Resource Fair -- On Saturday, January 14, at the Marin Civic Center in San Rafael, two environmental education specialists, one interpretive specialist, and one volunteer from SFBNWR, along with a visiting environmental education specialist from Minnesota Valley NWR attended the popular Bay Area Environmental Education Resource Fair. The focus of the fair was to bring people closer to the resources and issues surrounding our natural world. It provided science and ecology workshops and exhibits for educators. The staff and volunteer worked at a booth, handing out refuge information (such as refuge brochures, *Tideline*, EE brochures, etc.), selling items from the bookstore, playing the "Salt Marsh Survival" board game with visitors, and talking to educators about refuge EE resources. The Endangered Species Road to Recovery display from the Regional Office was the beautiful backdrop for the booth. Along with this display, there was an Endangered Species Jeopardy game also from the Regional Office, which succeeded in getting people to stop, play, and learn about endangered species and the refuge. Staff

attended several of the workshops offered at the fair and visited other organizations' booths.

Forest Conservation Days - On March 13 and 14, two environmental education interns participated in Forest Conservation Days at Sanborn Park in Saratoga. Forest Conservation Days is designed to increase awareness, knowledge, and appreciation of natural resources and their management and increase understanding of forestry and the role of foresters in resource management. The event lasts a total of two weeks, and involves nearly 3,000 Bay area, 5th grade students. The students ride a bus to Sanborn Park and spend a half day at the event. The interns acted as hike leaders, taking groups of 20 students at a time on a two-hour, 1/2 mile hike. Students also participated in hands-on activities and saw exhibits of a steam donkey, saw mill, nursery, fire fighting equipment, and natural resources careers, among others.

Newark Days Parade -- Twelve volunteers helped decorate our airboat and accompanied the exhibit as it was towed through the streets of Newark as part of the 40th Annual Newark Days Parade. The airboat exhibit drew many comments from spectators along the parade route as the volunteers interacted with the crowd. The airboat exhibit featured information about some of the first National Wildlife Refuges established in the "olden" days.

Santa Clara Valley Audubon Society Education Day -- On Saturday, March 11, the interpretive specialist and volunteers attended the Santa Clara Valley Audubon Society Education Day, where they led bird activities and informed the public about the Refuge. The focus of this fair was on environmental education programs for K-6 students, parents, and teachers. The event was held at McClellan Ranch in Cupertino - Santa Clara Valley Audubon Society headquarters.

Special events were held at the Refuge during 1995. The following briefly describes these programs and events:

Visit from Secretary of the Interior Bruce Babbitt -- Secretary of the Interior Bruce Babbitt paddled a canoe down Newark Slough in November and held a press conference at the Refuge's environmental education area, as part of his recent national tour that he conducted to promote passage by Congress of environmental legislation.

While here, the Secretary praised the efforts of the Bay Area citizenry to save the South Bay's remaining wetlands, participated in the environmental education program with Schilling School and Warwick School, chatted with local residents, and posed for a photograph with the Refuge staff.

Nancy Fries was the celebrity of the month, having her photograph in papers from Klamath Basin to San Diego. She shared the canoe with Secretary Babbitt, and helped keep him on course.

The Secretary was obviously impressed with the environmental education program which was underway during his press conference. Children from two schools were hard at work on their salt marsh investigations when Mr. Babbitt cruised up on the

scene, and he took part in their studies with them for a short while! We believe that the visit was good for the Secretary, for the kids who now have a lifelong memory, and for the Refuge, which is always trying hard to demonstrate to the public that salt marshes are worth not only studying, but saving. Secretary Babbitt afforded us a chance to do so.

Snowy Plover Exhibit in the Visitor Center -- Amy Hutzler designed and installed a temporary exhibit in the Visitor Center to provide information about the annual closure of Marshlands Road to protect Western snowy plovers. Snowy plovers are threatened shorebirds that nest alongside the road. A management decision was made to close the road during the breeding season to prevent chicks that wander onto the road from being run over. Marshlands Road leads to a fishing pier at the edge of the Bay. The exhibit answered the question: "why is Marshlands Road closed to cars?" A photograph of a well-camouflaged chick on Marshlands Road was used to reinforce the importance of closing the road. The exhibit will go up each April before the road is closed.

Earth Day -- The 25th anniversary celebration of Earth Day was held at the Refuge on Saturday, April 22. This year's theme was "Endangered Species - Take Responsibility." Hourly programs, children's activities, nature walks and the environmental information fair helped visitors learn how they could become involved and take responsibility. (Please refer to the flyer at the back of this narrative.) Over 500 people attended.

The hourly programs included presentations by Refuge Wildlife Biologist Joy Albertson on the endangered California Clapper Rail; by Law Enforcement Officer Rose McCloud on illegal trade of endangered animals and their products; and by Refuge Volunteer Karen Bane-Gaston on the endangered species of the San Francisco Bay area.

Children's activities included a brine shrimp discovery station led by Volunteer Haven Thompson, and "Endangered ABC's", a craft project led by Volunteers Elaine Aguada and SCA interns Katy Goodman and Caroline Bennett. Nancy Fries led a short puppet show, "Interview with Salty the Salt Marsh Harvest Mouse." Children who wished to make a button commemorating the day's events were helped by one of our school-aged volunteers, Roxanne Kennedy.

Eight different environmental organizations from around the Bay Area staffed informational tables. The groups included the Sierra Club, Alameda County Home Composting Program, Bay Area Amphibian and Reptile Society, Citizens Committee to Complete the Refuge, Ohlone Audubon Society, Save San Francisco Bay Association, Growing Native, and the Tri-City Ecology Center.

Native Plant Day -- This spring we held a Native Plant Day and a symposium with guest speakers, workshops, demonstrations, and the sale of California native plants. Activities were designed to educate the public about native plant species, how to use them in landscaping a home, and how to care for them. The event attracted several hundred visitors who came to the Refuge to learn about native plant horticulture, and

went back home at the end of the day knowing about the National Wildlife Refuge System, the importance of wetlands, and the value of planting with native species.

Endangered Species Poster Contest -- The Annual Endangered Species Poster Contest is a traditional annual event, held in conjunction with Earth Day, that encourages elementary students to study and discuss endangered species in class, and then create posters to illustrate their feelings about their favorite endangered species. Announcements sent to every public and private elementary school in Newark, Fremont, and Union City brought in hundreds of creative posters, many of excellent quality that conveyed very important messages about conservation of endangered species. First place winners and their parents received entry passes for a behind-the-scenes tour of the Marine Mammal Center in Marin, California, a marine mammal rehabilitation center; second place winners and their parents received passes to the San Francisco Zoo; and third place winners and their parents received passes to the California Academy of Sciences.

California Coast Clean-Up Day -- The Refuge celebration of California Coast Clean-Up Day on Saturday, September 1 was a resounding success. The Refuge organized clean-up sites at six different locations on the Refuge: the Dumbarton Fishing Pier, Shoreline Trail, Marshlands Road, the boat launch, Coyote Creek Lagoon Trail, and the Environmental Education Center. Refuge volunteers and staff were on hand to register volunteers, distribute bags, drive vehicles and do everything else needed to make the clean-up a success. We had a much better turn out in 1995 due to increased publicity. We sent out two press releases, not including the listing in the usual activity schedule, and hung posters around the local community. This publicity as well as that from the Coastal Commission greatly increased visibility for this year's event.

Despite cloudy skies and cool weather, approximately 530 people came out to the Refuge fishing pier, 40 people came to Coyote Creek Lagoon, and 35 to the Environmental Education Center for the three and a half hour clean-up. There were numerous school groups, including large groups from American High, Washington High, and Warwick Elementary. Local boy and girl scout troops were also well represented. Almost 7 tons of debris were collected from the sites on the Refuge. One hundred fifteen bags of plastic, glass, and aluminum were collected separately and then recycled by the East Bay Conservation Corps. Trash bags were provided by the California Coastal Commission, California Department of Transportation, and the Refuge. East Bay Disposal and BFI provided debris boxes. The City of Fremont and Alameda County provided pick-up trucks, a flatbed, and drivers.

Water, juice and soda were available throughout the morning. Thank you gifts for participants were provided by the California Coastal Commission and included patches and discount admission tickets to Marine World Africa USA, a bay area exotic animal park.

Kids Day was a popular special event held in February with approximately 200 participants. Visitors colored their own bird identification books and then looked for the birds from their books outside on a guided walk. Participants were fascinated by the live native wildlife presented by Sulphur Creek Nature Center. In a Salt Marsh

Mystery Adventure participants learned about why the salt marsh harvest mouse has become extinct and about how to help protect its remaining habitat by conserving water. Visitors explored life in the marsh in a guided Marsh Walk. There were also butterfly crafts, a lab to investigate water organisms, a craft activity about the salt marsh harvest mouse and its habitat, and Ohlone Indian activities.

International Migratory Bird Day occurred in May. Coyote Creek Riparian Station gave a bird banding demonstration, the San Francisco Bay Bird Observatory presented a slide show on migratory shorebirds, and the Santa Clara Valley Audubon Society gave a presentation on creating habitat for migratory songbirds. Kids made barn swallow masks and followed footprints leading them to learn about swallows. They also played "What can I eat with this beak?", learning about beak adaptations. Visitors made bird feeders and painted dough swallows. There was a Beginning Bird Walk, guided bird walks, and an activity with a water model that shows that we can help protect migratory birds by preventing nonpoint source pollution. Water conservation kits were given away to help visitors protect habitat. A diverse group of 103 participants enjoyed this event, learning about migratory birds, and how to protect them.

A Halloween Party was held at the Environmental Education Center in October. During the Beginning Bird Walk, participants colored their own bird books while learning about the "creepy crawlies" that different birds eat, and then looked for the birds from their books outside on a guided walk. In a mud studies lab visitors examined a sample of mud to discover the life that lives in it. Participants also learned about preventing nonpoint source pollution in a Pollution Toss Game and Mystery Scavenger Hunt. Visitors enjoyed making Halloween hats that looked like local wildlife, and made treats for wild birds. There was also a variety of snakes to hold from the Bay Area Amphibian and Reptile Society. Over 75 people had a wonderful time while learning about the variety of life found around the bay, and about how each one of us can help protect it.



EE Specialists Amy Hutzal and Sandy Spakoff give a puppet show at Warwick School during National Wildlife Refuges Week



Sharkie, mascot of the San Jose Sharks, signs autographs at Shark Day



EE Specialist Amy Hutzel and SCA intern Katy Goodman with a class at the Redwood Environmental Education Fair in Humboldt County



Interpretive Specialist Nancy Fries and EE Specialist Amy Hutzel share information with visitors at BAER Faire.



Volunteers Claire Gililand and Ed Kantack enjoy a ride on the Refuge airboat during the Newark Days Parade



Secretary of the Interior Bruce Babbitt paddles his own canoe, but Nancy Fries sees to it that he makes a perfect landing for the press



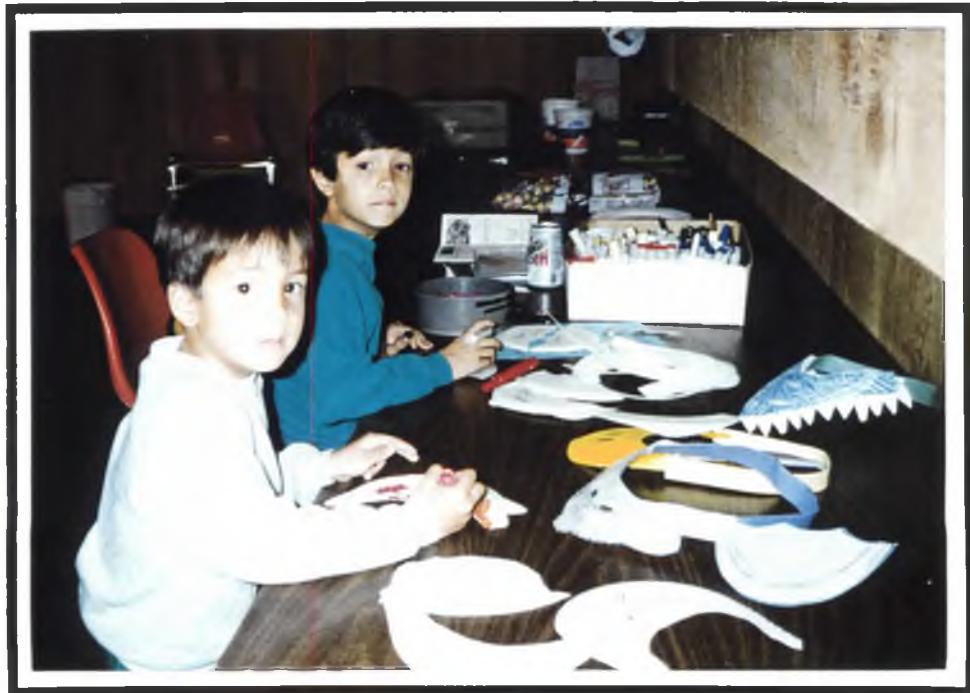
SCA intern Jennifer Carman guides an inquisitive investigation into slough water teeming with life during Kids Day



What a thrill to see and touch the native wildlife brought by Sulphur Creek Nature Center on Kid's Day



Migratory Bird Day at the Environmental Education Center



Artists at work! These kids are creating "bat hats" at the Environmental Education Center Halloween Party

H.7. Other Interpretive Programs

In spite of all of the efforts that we made during the year to contact the public, we know that there are many thousands of people out there who don't know about us or whose interests do not include endangered species, wetland preservation, migratory birds or anything else along those lines. Reaching *these* people is one of the most challenging tasks with which the public use staff is confronted. People first need to know that the Refuge exists, then the next step in reaching them is getting them out to the Refuge where they can see with their own eyes what sort job we are doing and what needs to be done in order to protect wildlife habitat.

In order to get the word out about us and to ultimately get people to the Refuge, the public use staff participated in some non-traditional education and outreach efforts. The following briefly describes what projects were undertaken in 1995.

Tideline -- Foremost among our non-traditional interpretation efforts was the production of a quarterly newsletter, *Tideline*. A copy of each issue of the newsletter is included at the back of this narrative. In 1995, *Tideline* was distributed quarterly to 23,500 Bay Area households, school, businesses, churches, hospitals and libraries. It was considered to be our very best means of communicating our program schedules, announcements, news stories, advertisements and editorial comments. In fact, many of our programs were filled to capacity by *Tideline* recipients. *Tideline* has been used as a text at a training course for urban managers at the National Park Service's Training Center at Harper's Ferry in West Virginia. It is also used as a supplement to formal text books in many high school biology classes. We repeatedly get requests from biology teachers for subscriptions for that purpose.

Tideline, which is financed by San Francisco Bay Wildlife Society, was printed on recycled paper. Our mailing list was managed by Volunteer Howard Collins and Kris Young, who coordinated additions, deletions and changes to the list. Volunteers also helped with applying address labels to the issues before mailing. Without volunteer assistance, *Tideline* would not be possible.

Avocet Gazette -- *Avocet Gazette*, a quarterly newsletter for volunteers and staff members, focuses on news, events, and upcoming projects at the Refuge. This is an excellent way for staff members to recruit volunteers for projects, and to report on events.

After a year of searching for a new editor for this newsletter, Volunteer Shelley Buranek stepped up to the challenge. She has given the newsletter a new look and feel, and so far we have gotten a wonderful response from the volunteers.

Native Plant Nursery -- The San Francisco Bay Wildlife Society continued to manage a Native Plant Nursery that grows plants to enhance native habitat on this and other Refuges. It was also established to serve as a vehicle for reaching out and contacting non-Refuge visitors and thus bring them to the Refuge. Over 200 species of native herbs, shrubs and trees were grown in the nursery, entirely through the efforts of volunteers. The Native Plant Nursery is managed by Harry Sanders, a volunteer who

is accredited as "Master Gardener" through the University of California Agricultural Extension program.

Visitor Center Programs:

Artist's Receptions -- During 1995, the Refuge held four receptions for local artists who exhibited their original artwork in the Visitor Center auditorium. These exhibits portray habitats and wildlife found on the Refuge and around the San Francisco Bay area. Visitors have the opportunity to meet and talk with artists who devote their time and talent to capturing the beauty of Refuge wildlife. Through this artwork, visitors can experience the beauty and wonder found in the habitats of the bay, and come to better understand the need for conservation.

The receptions were advertised in *Tideline*, and were well attended. Many people who came to the receptions were first time visitors to the Refuge. The San Francisco Bay Wildlife Society provided refreshments.

Nature Walks -- The interpretive birding walks were the most popular walks at the Visitor Center. These included "Good Morning, Bird Watcher!", "Birding at Low Tide", and seasonal birding walks. These two-hour walks usually took place in the morning with an average of 10-15 participants. Most people that attended the walks were new to birding, and enjoyed the opportunity to learn about the bird species of the Refuge.

Several other interpretive walks were given along the trails of the Visitor Center covering topics such as botany, geology, and salt marsh ecology.

Slide Shows -- "A Ghost Town in San Francisco Bay?" was the most popular slide show again in 1995. The volunteers presenting the shows did an excellent job of relating the history of the ghost town. Visitors always left with the understanding that the old hunting village failed because the surrounding habitat was destroyed.

Volunteer Karen Bane-Gaston developed a new slide show entitled "Endangered Species of the San Francisco Bay." This program was created for Earth Day, but has become fairly popular since then. Visitors learned which endangered species can be found in the Bay area, why they are endangered, and what is being done to protect them.

Tours -- The always popular Drawbridge tours were conducted every Saturday during the dry season. This tour is not publicized, but earns its popularity through word-of-mouth advertising. Volunteer tour leaders impressed upon the over 450 visitors that human destruction of the natural environment was the cause for the town's demise.

Volunteer- led bike tours were also very popular. This is an excellent way to tour the levees in the dry season to learn about the Refuge.

One of the best places to view birds during the fall migration is along the levees. The Refuge Van Tour made this spectacular display accessible to people who can't hike or bike that far.

"Geotalk! Geowalk!", a two-hour program involving a slide show and a hike, provided visitors an opportunity to learn all about the geology of the San Francisco Bay area, but especially the Refuge.

Volunteer Ed Kantack developed a new program entitled "Life and Death Between the Tides", which begins with a short slide show introducing the participants to the habitats of the Refuge, and continues with a hike of the trails to experience these habitats first-hand.

Ed Kantack also helped revitalize the "Canoe the Slough" program. This program is an interpretive introduction to the natural history of the refuge from a different point of view. During the 2-3 hour trip, there are 6-8 scheduled stops for interpretation of topics including salt marsh ecology and habitat, endangered species, migratory birds, and native Americans.

Visitors interested in astronomy participated in our "Starstruck!" night programs, which begins with a slide show and lecture on the visible stars of that night. Afterwards, participants move outside and use telescopes to view the stars they learned about during the lecture. The volunteers leading this program provided high-end telescopes for special viewing opportunities, and participants also used their own telescopes. "Solar Viewing," an informal program presented once a month, makes use of a telescope with a special filter to view the sun and its spots.

The Discovery Pack Program is designed for families and other groups who want to hike the Tidelands Trail and take an up-close look at the habitats and plants and animals along the way. Discovery Packs are kept in the Visitor Center and can be checked out by visitors (such as families, scout groups, etc.). A poster advertises the program. The person who checks out the pack leaves their driver's license with the volunteer at the desk. When they return the pack, they clean the equipment, count items issued, and retrieve their driver's license. The packs have activity ideas for investigating the habitats at the refuge, such as mini-expedition, brine shrimp lab, and bird bingo. In 1995, a total of 264 people checked out Discovery Packs.

Weekend Programs at the Environmental Education Center:

Guided Bird Walks.: These popular 90-120 minute walks usually took place in the morning with an average of 10-15 participants. 132 visitors participated throughout the year. A wide variety of birds were observed. Some Bird Walks focused on a particular group of birds such as shorebirds, or parent birds, while others were a general survey of the bird population. Often a sample of mud or water was collected and observed to see examples of organisms which the birds eat. Many people that attended the bird walks were new to bird watching and took advantage of the binoculars we have to loan.

Protectors of the Bay was the second most frequently presented program. This interactive program showed how each one of us can protect the bay by preventing nonpoint source pollution. There were 59 people who attended this program. Participants used a functional model of a city by the bay which showed that household products placed in the streets flow down storm drains directly to creeks and the Bay. Participants discovered that this is a major source of pollution. Another activity

simulated how these pollutants concentrate to harmful levels as different organisms consume them. Participants also evaluated photos, pointing out which ones showed activities that contribute to polluting the Bay, and which prevented pollution. People had fun as they learned about how to prevent non-point source pollution.

Guided Marsh Walks were popular programs. These 60-90 minute walks included activities to reveal the unique attributes of salt marshes. Twenty-seven visitors were fascinated to see the diversity of life that depends on this habitat, and to learn about the important ecological role that wetlands play in the Bay Area.

Several other guided tours were given on the trails surrounding the center. *Habitat Walks* were 60-minute walks on trails showing the uniqueness of the different habitats found at the refuge. Twenty visitors participated. There was a 5-mile levee hike and volunteer led bike trips. In these programs, 24 visitors viewed the wildlife of the area by utilizing the salt pond levees that surround the south end of the bay. There were also two *Walking Tours to Drawbridge* in which 31 participants saw the ghost town and learned about its history, including how the old hunting town failed because of the destruction of the surrounding habitat.

Two programs helped people get started bird watching. These programs were a *Beginning Birding Workshop*, and a *Duck ID. Workshop*. Both began with a slide show and lecture on how to identify birds frequently seen at the refuge. Afterwards 33 visitors went outside and practiced their new identification skills. The *Beginning Birding Workshop* focused on a wide variety of local birds. The *Duck ID. Workshop* focused on migrating ducks. Many participants borrowed our binoculars to search for the birds at the refuge.

There were popular winter holiday programs, attended by 38 visitors. In *Decorating For The Birds* participants made edible decorations for birds to put in their yards. They also took a walk outside and observed some birds that might eat the edible decorations. The *Salt Marsh Gifts Walk* began with a walk through the salt marsh investigating its "gifts" (or beneficial characteristics), and ended with opening actual presents that represented the "gifts" discovered outside. Participants also did an activity to learn how they can protect the gifts of the salt marsh by preventing nonpoint source pollution.

There were also popular spring holiday programs with 48 participants. In the *Easter Hunt* visitors participated in a scavenger hunt to learn about why the salt marsh harvest mouse has become endangered, and participated in an activity to learn one way that they could help protect its remaining habitat. In *Egg Creations* participants went on a walk observing nesting birds. Afterwards they learned about some adaptations of eggs of the different birds observed. They also painted dough eggs in an art activity. At the end of both of these programs participants went on a hunt for Easter treats.

Vacation in the Marsh was a program held in the summer composed of a variety of activities. Twenty nine participants colored their own bird identification books and then looked for the birds with binoculars outside in the *Beginning Bird Walk*. Visitors collected a sample of water from the salt pond and observed the tiny water organisms

in a lab. Participants were fascinated to learn about and dissect owl pellets in a lab. Visitors also participated in activities to learn about the life of a butterfly, and the butterflies found around the area.

Astronomy programs were regularly scheduled at the Environmental Education Center. These programs were designed and led by a refuge volunteer who is an amateur astronomer. *Solar Viewing* was an informal day time program presented to 43 visitors. A telescope was set up for several hours which had a special filter for visitors to view the sun and its sun spots . The volunteer was also available for discussion about astronomy. *Star Struck* was a formal night time program. It began with a slide show and lecture on the stars and planets visible at the particular time. Afterwards participants went outside and used telescopes to view the stars and planets that they had learned about.

On the *Edible Plant Walk*, 6 visitors learned which plants of the marsh and uplands are edible and which are poisonous. Participants tasted samples of the edible plants, including pickleweed and fennel seeds, as well as products made from the plants, such as horehound candy and elderberry jam.

There was great interest in the *Ohlone Program* attended by 17 visitors. It introduced the California Indians that once lived near the Bay. Participants learned about the lifestyle of the Ohlone Indians as they investigated some Ohlone style artifacts from the Environmental Education Program's collection. Afterwards, visitors took a walk outside and observed some of the plants and animals that the Ohlone utilized. The kids who participated particularly enjoyed playing some Ohlone Indian games from the Program's collection.

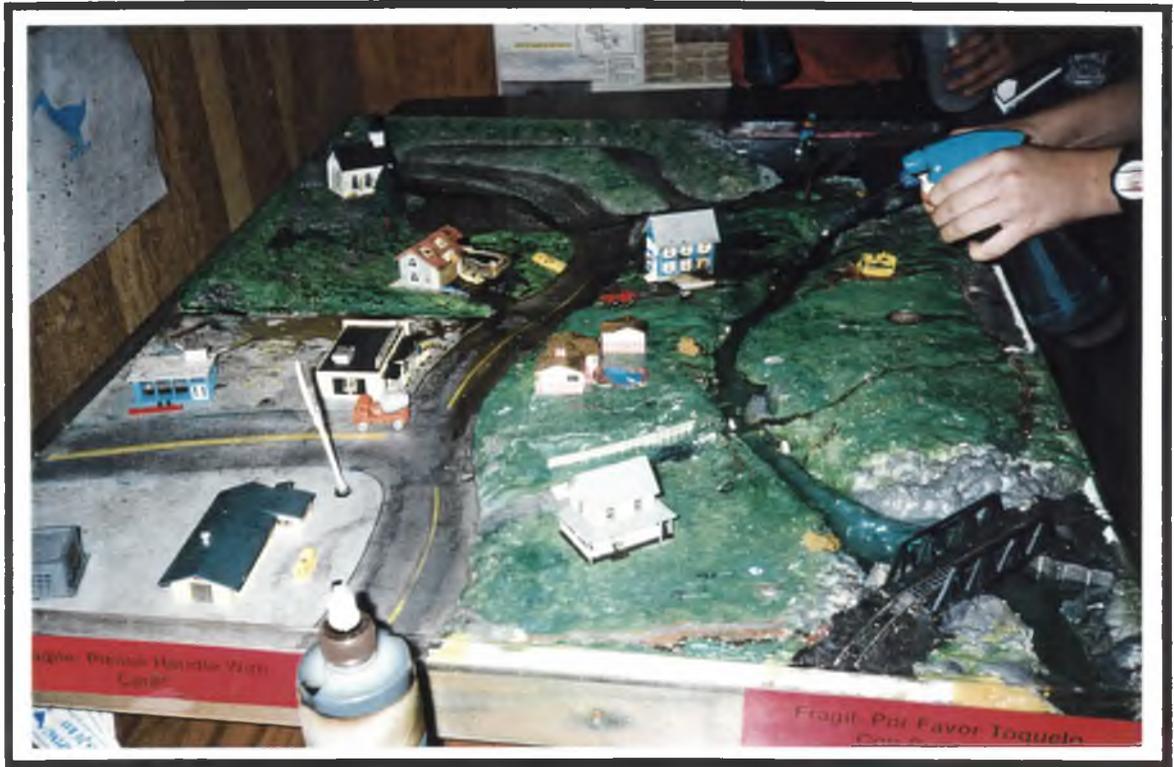
There were *Salt Pond Water and Slough Mud Labs*. In these informal programs 41 visitors closely observed water samples from a salt pond and mud from a slough near the center. Participants were fascinated to see the tiny organisms found in each sample. Participants also discovered the importance of these organisms as a food source for larger creatures that inhabit the areas, particularly migrating and local birds.



Chief of Public Use John Steiner introduces Boy Scout Troop 8 to the wonders of the Refuge



A visitor shows others a unique gift of the salt marsh during the Salt Marsh Gifts program



Protectors Of The Bay: Visitors use this model to see that storm drains flow *directly* to creeks and the bay!

H.9. Fishing

Anglers made good use of the several saltwater fishing areas on the Refuge.

Dumbarton Fishing Pier and the adjacent north and south trails along the Bay are favorite fishing spots for anglers. The access road to this area is closed to motor vehicles from April through August each year to protect the threatened Western Snowy Plover which nest adjacent to the road. Plover chicks have been known to enter the roadway, which put them at risk of being struck by the often heavy traffic moving to and from the pier. The road is still open to pedestrian and bicycle traffic, and a shuttle is available by reservation to take anglers to the fishing pier on weekends.

Coyote Creek Lagoon, at the southeast portion of the Refuge, is a favorite bank fishing spot for those hoping to hook a white sturgeon. Bank fishing also occurs on a smaller scale in the Ravenswood area located at the west approach to the Dumbarton bridge. All together, we estimate served over 6,000 saltwater angler "uses" on the Refuge this year.

Fishing from or near the pier has netted a variety of fish: leopard shark, sand shark, bat ray, shiner surf perch, kingfish, bullhead, and the elusive striped bass, white sturgeon and salmon.

Environmental Health Hazard Assessment that advised anglers to limit the amount of Bay fish that is eaten. These warning signs were posted in Korean, Spanish, Cambodian, Chinese, Vietnamese, and English at the most popular fishing areas.

H.10. Trapping - Nothing to report.

H.11. Wildlife Observation

The opportunity to view wildlife in its natural habitat attracts many of our visitors. The Refuge offers a variety of habitats such as salt marsh, sloughs, extensive mud flats, open water and upland coastal chaparral, grassland and trees. This range of habitats provides an ideal area for visitors to explore, on their own or with our naturalists, when seeking local wildlife.

Some visitors participated in van tours or canoe trips on Mallard Slough and Triangle Marsh, where marsh-nesting and feeding birds were easily seen. Most visitors walked or biked the many miles of Refuge trails on their own, viewing resident nesting birds, migrating and wintering shorebirds and waterfowl, and young birds during the spring and summer months. Bird watchers revel in these opportunities. In addition, many nature study groups led field trips to our Refuge, and the Audubon Society once again conducted its annual Christmas bird count here.

One of the most popular sites for local bird watchers was the restored tidal area, Avocet Marsh, where great numbers of shorebirds and migrating waterfowl gather to feed. There is also a peregrine falcon commonly sighted here.

In June, the Refuge participated in the 7th Annual Butterfly Count sponsored by the American Butterfly Association. The event drew a number of seasoned, professional lepidopterists as well as first-time amateurs. The counters spent the day searching out butterflies near the Visitor Center and EEC, as well as a nearby riparian corridor. They noted 17 species among a total of 612 butterflies sighted. It was great fun for everyone and will be repeated in 1996!

H.12. Other Wildlife Oriented Recreation - Nothing to report.

H.13. Camping - Nothing to report.

H.14. Picnicking - Nothing to report.

H.15. Off-Road Vehicles - Nothing to report.

H.16. Other Non-Wildlife Oriented Recreation - Nothing to report.

H. 17. Law Enforcement

The goals of our public safety unit continues to remain the same; to swiftly react to urgent crime and public safety concerns as a short-range goal, and to continually evaluate our efforts to prevent crime from occurring and to correct public safety hazards before they claim any victims as the long range goal. As our visitation and properties increase at the San Francisco Bay National Wildlife Refuge Complex, our officers will be severely challenged.

Officer Robert Bolenbaugh was transferred to the Klamath Basin National Wildlife Refuge Complex in Tulelake, California.

These transfers will lessen the law enforcement patrol efforts at the Don Edwards San Francisco Bay Refuge because there will no longer be the luxury of three full-time officers stationed at this complex. This, however, will enhance the law enforcement programs of the other refuges employing this transferred officer. His experience and dedication will assist these refuges by channeling needed resources and freeing up staff to work in their primary areas of responsibility.

At this refuge, patrolling is done selectively, depending on previous incidents and the number of visitors using the Refuge. Patrol activities in the North Bay were routinely conducted by the North Bay assistant refuge manager who had law enforcement authority. Random weekend patrols were conducted as scheduling and activity allowed.

Patrols of the South Bay and the southern two refuges of this complex were primarily conducted on weekends by officers from this Refuge. Due to a number of auto burglaries and unexplained vandalism and theft of Snowy Plover nests (threatened species) in the area, patrols to the Salinas River NWR were increased.

The following represents the type of criminal activity that occurred at the Refuge during 1995.

On February 9 at approximately 6:55 p.m., suspects attempted to break into the beverage machine at the rear of the headquarters building. The refuge had closed earlier and the area was dark. A staff member went to secure the rear gate of the headquarters building and saw three unknown suspects creeping around the front of the coke machine. When the staff person yelled that the refuge was closed, the suspects moved quickly away from the machine and the staff person. This was the beginning of a series of actions on the part of the suspects. The staff member thought about the suspect's actions and again went to where the machine was positioned and attempted to ascertain if there had been any damage done to the machine. When the staff member approached the machine, again there were two suspects at the machine. These suspects moved quickly away from the machine and disappeared into the darkness as the staff member approached. The staff member called an off-duty officer, and while he was on the phone, went to the back windows of the headquarters building overlooking the machine. At this time there were noises of pounding and banging as the suspects attempted to break into the machine while the staff person was on the phone. A subsequent search failed to find the suspects. A

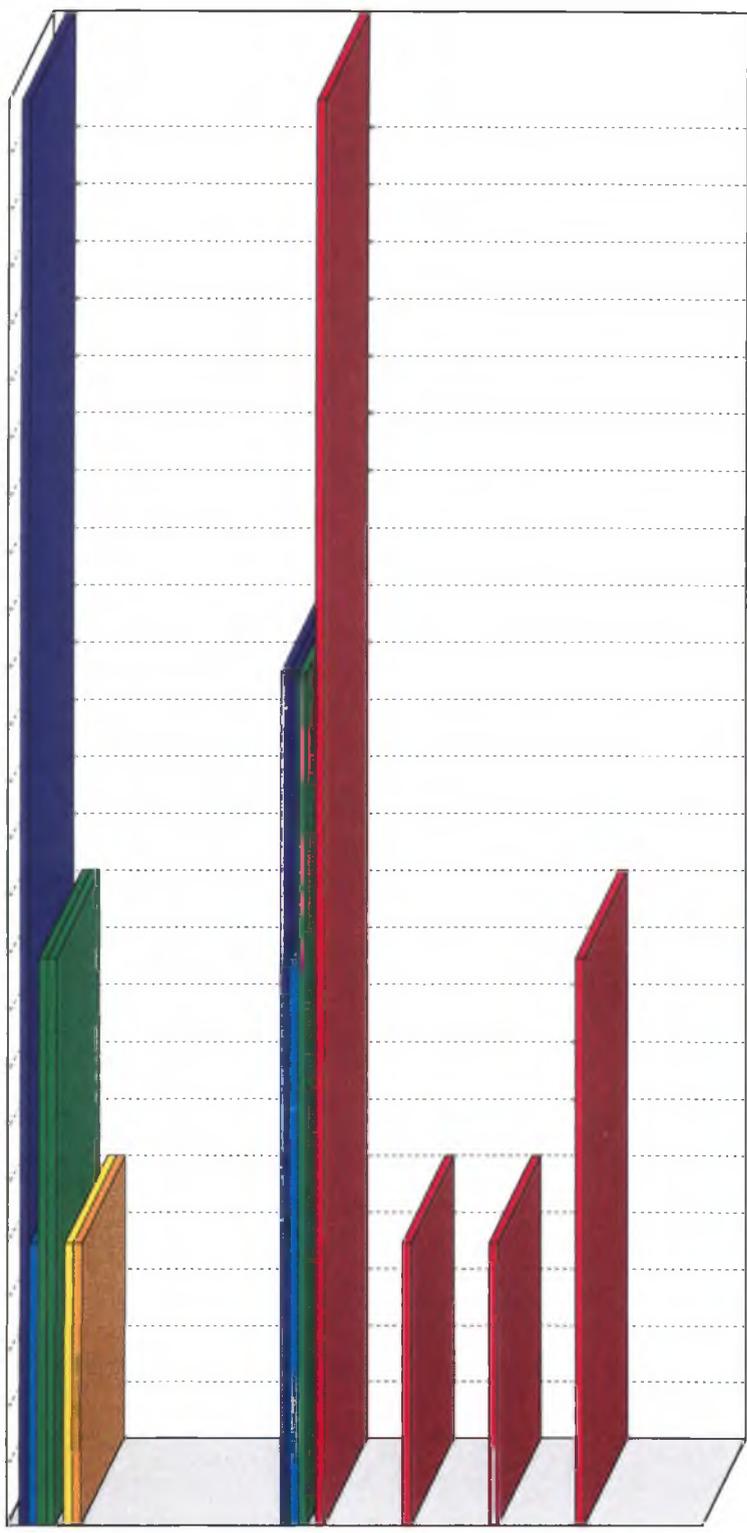
check of the machine showed that there had been an attempt to enter the coin box area. Marks left on the machine indicated that a cutting instrument (possibly tin snips) was used to cut away the front facing of the machine. Marks also indicated that a portable drill was used in an attempt to enter the coin box. The suspects were suspected to be juveniles riding bicycles because a refuge staff person returning from a call count saw four juveniles departing the closed refuge on bicycles during the time frame that this incident took place. Damage was estimated at \$1,200.00 by the vendor.

On February 27 at approximately 10:05 a.m., Officer Bolenbaugh was conducting a patrol in the Drawbridge area. He found that a wooden boardwalk had been destroyed by unknown suspects. Drawbridge is a Ghost Town and is a popular place to tour and trespass on the Refuge. This area is also adjacent to a series of salt ponds operated by the Cargill Salt Company, and is fished by the Novalek Inc., both having operating agreements with the Refuge. A number of vandalism reports have been taken over past months in these areas. Repairs were done by the Cargill Salt Company. The estimated damage was \$2,700.00, which included parts and labor.

On May 25 Officer Adamson was assigned to take a vandalism report at Pond A-19. This pond is a refuge pond where brine shrimp is harvested by Novalek Incorporated. The shrimpers' equipment at this pond has suffered numerous incidents of vandalism. This includes but is not limited to cut ropes and nets, shrimp boats set adrift, graffiti and equipment thrown into the pond waters. The damage reported this time was the dismantling of the boat dock. The estimated damage was \$500.00. After this occurrence, Officer Adamson cited a trespasser and the vandalism suddenly stopped.

On May 25 at approximately 11:35 a.m., Officer Haire noticed damage to the large entrance sign leading to the Environmental Education Center in Alviso. This sign had been installed only two weeks earlier. There were several cut marks on the left vertical edge of the sign. The instrument used was possibly a machete type tool. A suspect was never identified. Damage was estimated to be \$500.00.

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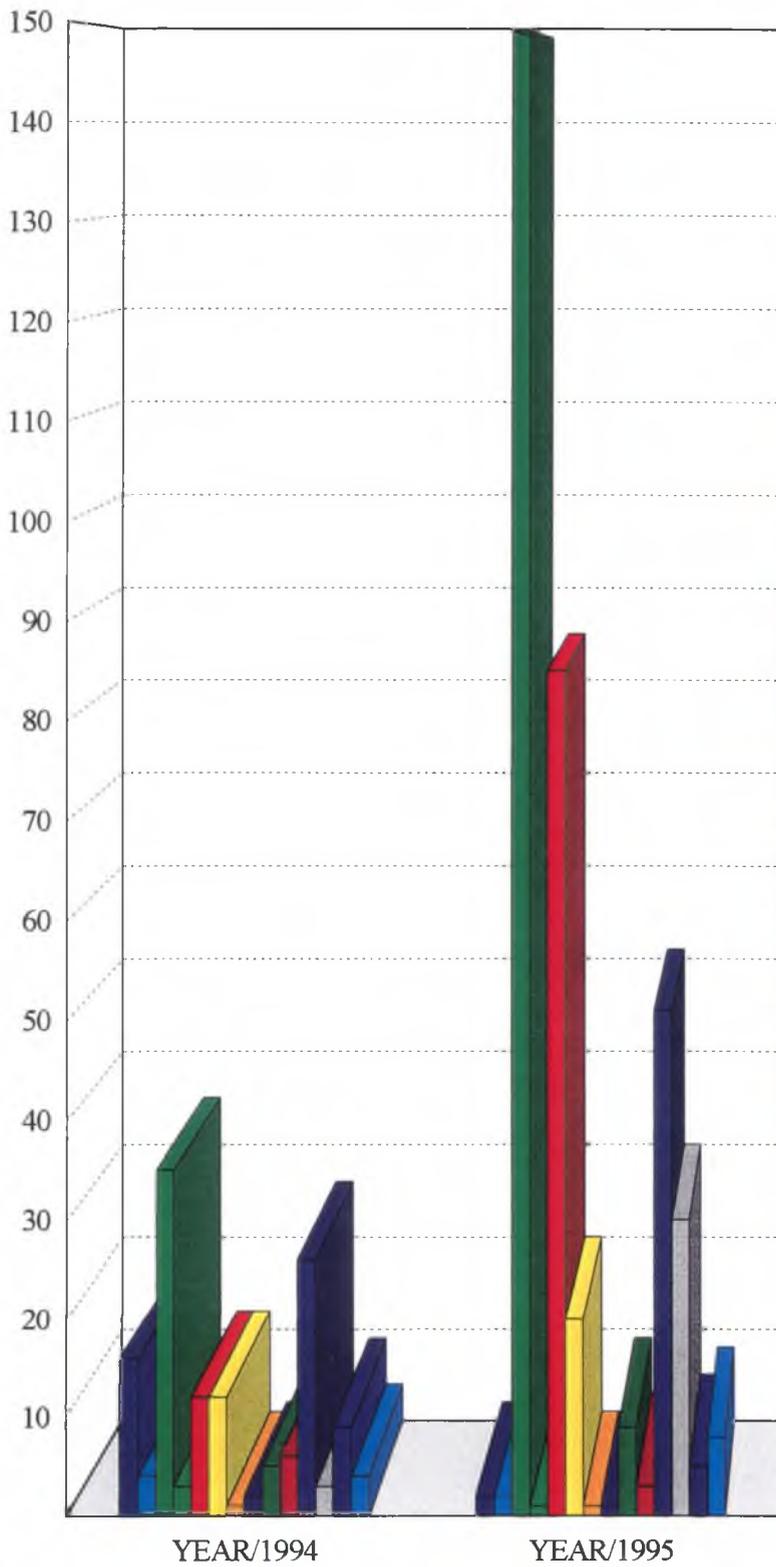
DRUGS
1994
AND
1995
COMPARISON

- MARIJUANA
- COCAINE
- METH
- PARAPHERNALIA
- FOUND
- INFLUENCE
- DUI

- OFFICERS
- TARBET
3300
- ADAMSON
3311
- HAIRE
3410

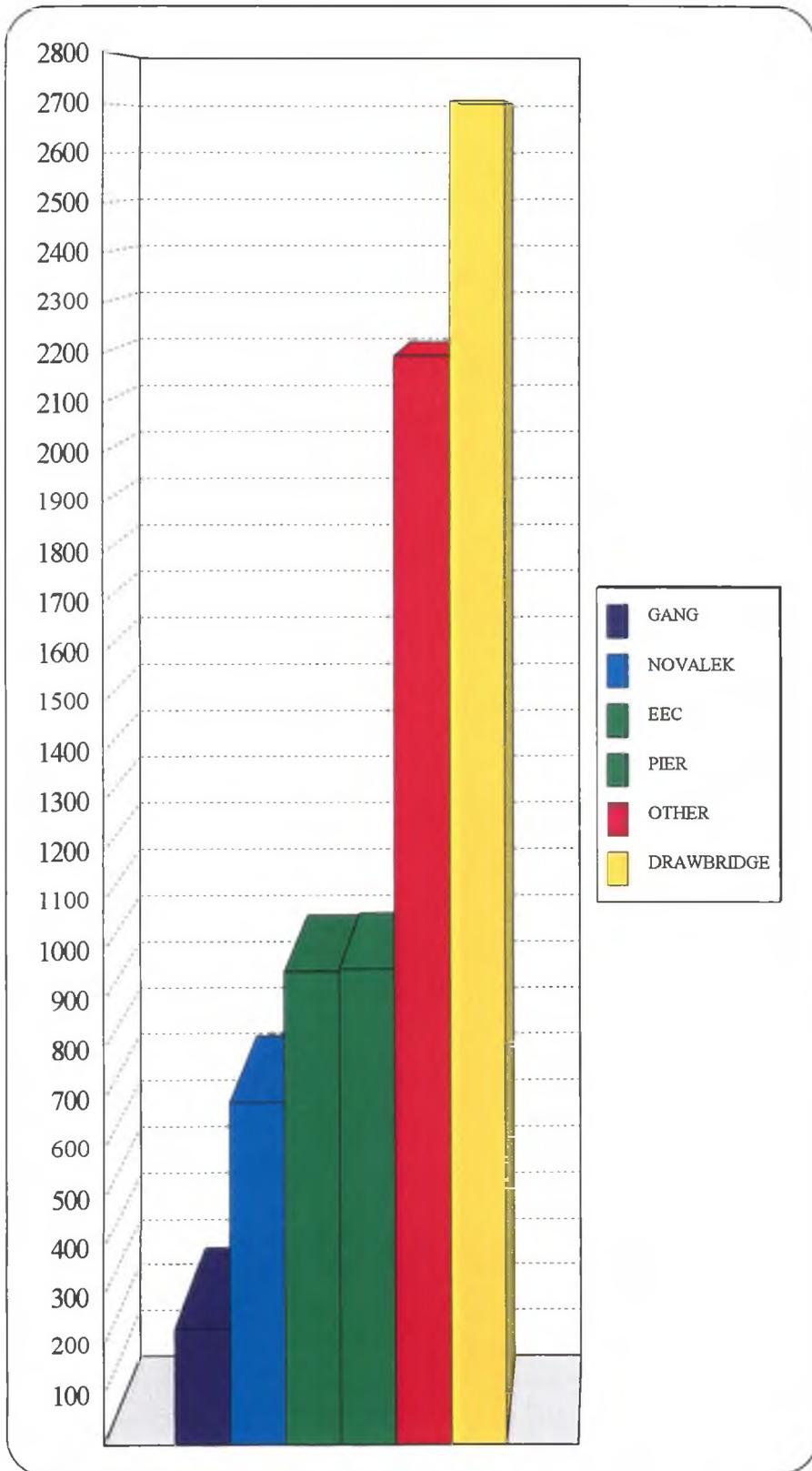
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INCIDENTS 1994 AND 1995 COMPARISON



- BOAT LE INCIDENTS
- AIRCRAFT LE INCIDENT
- TRAFFIC
- HATE/BIAS CRIME
- RESOURCE
- DRUGS
- ATT/SUICIDE
- MENTAL/SUSPECT
- GANG/GRAFITTI
- SUSPICIOUS/CIRCUMST
- VANDALISM
- WEAPONS
- BURGLARY
- THEFT

VANDALISM
BY
AREA
AND
ESTIMATED
COST OF
REPAIR



H.18. Cooperating Associations

For eight years, the San Francisco Bay Wildlife Society (SFBWS) has sponsored and financed education and outreach programs for the Refuge. This nonprofit, public-benefit corporation raises funds and awareness in a variety of ways; through bookstore sales at the Visitor and Environmental Education Centers and at community fairs, community donations, gifts and grants, memberships, native plant sales and natural history seminars for adults. Total FY-95 income (including the other SFBWS affiliated Refuge bookstores) was \$ 111,723.

The Bookstores are still the largest source of SFBWS revenue. Gross sales for FY-95 were \$29,508.90. To increase flat bookstore sales from previous years, inexpensive but high quality gift merchandise was added to inventory. Finger puppets and other small, under \$5.00 items were selected for trial use from catalogues and gift shows. New modes of display, such as counter baskets, were also used to help spark incremental sales. Sales at the other refuges were also strong during this period; Klamath Basin NWR grossed \$ 13,296.47, Malheur NWR \$ 19,155.13, and Sacramento NWR \$ 8,199.74

Community contributions reached \$ 1,535.28. These unrestricted donations came from donation boxes in the visitor and education centers, community fairs and undesignated gifts arriving in the mail. The only tactic employed to increase these contributions was purchasing new blue tablecloths and SFBWS banner for our community fair booth to increase the identity of the organization.

Grants administration has quickly become another important responsibility for SFBWS. Administering grants and restricted funds for the seven refuges has complicated SFBWS bookkeeping requiring the conversion to Quickbooks, a more sophisticated accounting software program. Grants were written by both Refuge and SFBWS staff during the year for facilities at the Malheur NWR, education curricula and publications at San Francisco Bay and the Earth Stewards program at Sacramento NWR. IN all, corporate, foundation and federal grants totaled \$ 70,928.

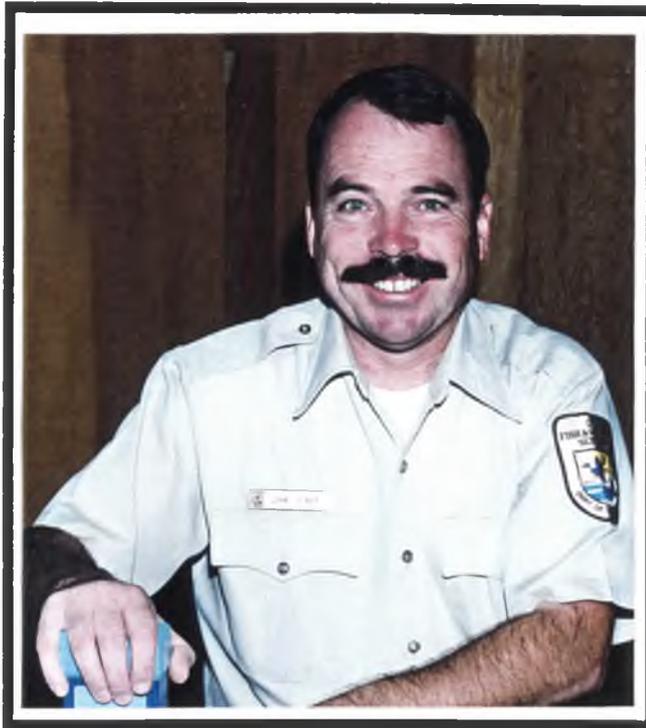
The membership department has retained more members and shown slight growth through use of an additional renewal letter, by inserting remittance envelopes in the *Tideline* newsletter and sending membership appeals to *Tideline* subscribers. A slight increase in the lower membership dues categories also helped raise revenue. New and renewing membership income for this period grew to \$ 13,933.

Explore the Wild! seminars were offered during fall, 1994, spring and summer 1995. The most popular trips were whale watching and kayaking. Heavy rains canceled every winter trip. Press releases were sent to local newspapers to increase registration. Nine trips for 155 participants netted \$ 1,984.43.

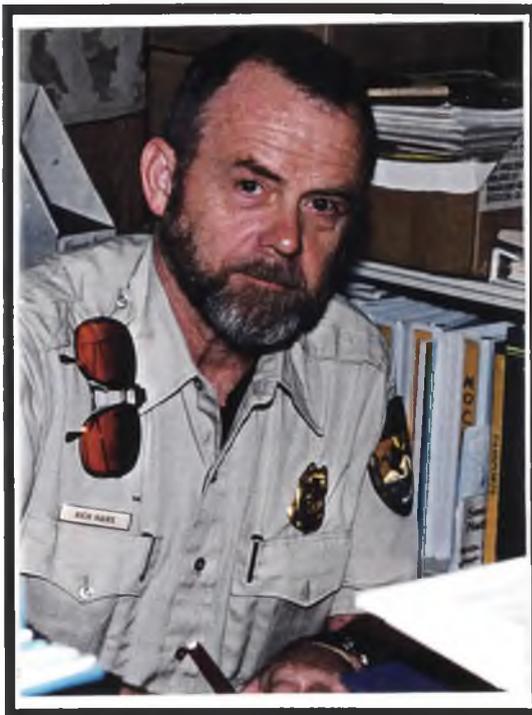
Program Administrator Cecily Harris works part-time on bookkeeping, fundraising planning and implementation for SFBWS and acts as liaison to the other refuges in the cooperating association.

Nine community volunteers serve as members of SFBWS' Board of Directors. The Directors provide overall guidance; setting policies regarding fundraising activities and reviewing legal contracts related to the seven Refuges SFBWS works with. An Operations Committee meets monthly to make decisions about ongoing activities.

Refuge volunteers assist with all aspects of SFBWS. Stan Brown tracks the membership program, Howard Collins maintains the *Tideline* mailing list, Tooky Campione helps with ordering merchandise and staffing tables at community fairs, and Harry Sanders manages the bi-annual Native Plant Sales.



JOHN STEINER: Chief of Public Use



RICH HAIRE: Outdoor Recreation Planner



NANCY FRIES: Interpretive Specialist



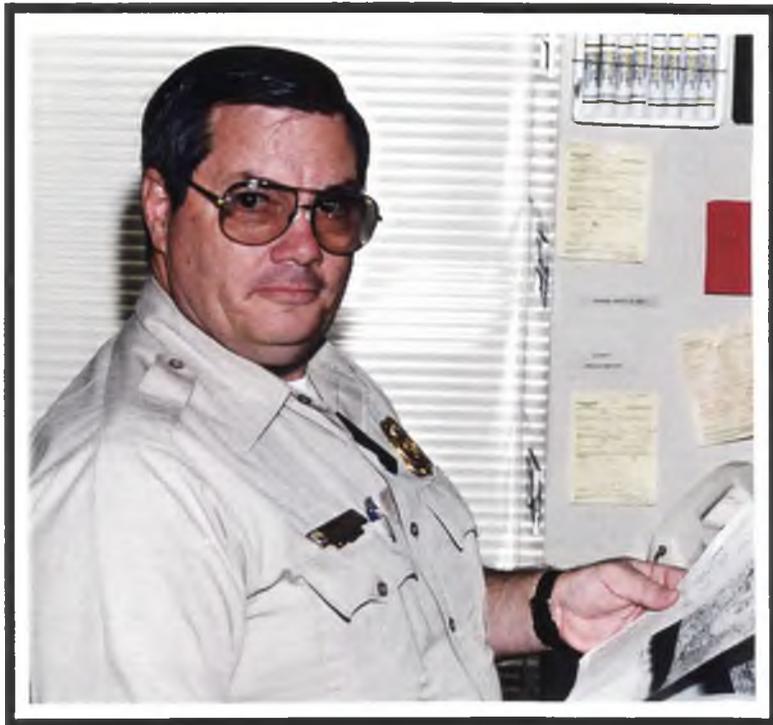
AMY HUTZEL: Education Specialist



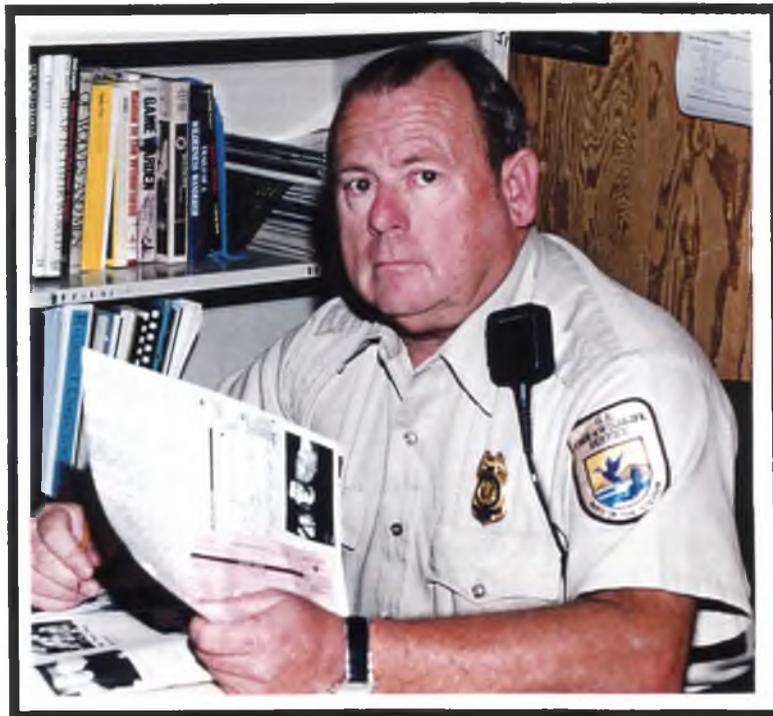
FRAN MC TAMANEY: Environmental Education Coordinator



SANDY SPAKOFF: Environmental Education Specialist



BARRY TARBET: Police Officer



JON ADAMSON: Police Officer



CHRISTINE COY: Weekend Director
of the Environmental Education Center



CECILY HARRIS: San Francisco Bay
Wildlife Society Program Administrator



APPENDIX

U.S. Fish & Wildlife Service Environmental Education Resource List for "Linking Girls to the Land" Workshop participants

National Office for FWS, Refuges

FWS, Refuges

Nancy Marx (703) 358-2029 x 5245

Program: *Watching Wildlife, A Skills Workshop* Guide for youth groups - available in 1996

Region 1 - Environmental Education Coordinator

Glenda Franich (503) 872-2705

USFWS, Refuges & Wildlife

911 N.E. 11th Ave, Portland OR 97232

Field Stations:

San Francisco Bay National Wildlife Refuge

Fran McTamane (408) 262-5513

Programs: Trekking the Refuge Educator-Led Field Trip
Available on weekends

Sacramento National Wildlife Refuge

Denise Dachner (916) 934-2801

Programs: CARGO for Conservation box - presentations
Field Trips and Educator Workshops

Ecological Services, Sacramento

Bob Pine (916) 979-02752

Program: Habitat Evaluation Procedure (HEP) - hands-on
activity for Girl Scouts

Region 2 - Environmental Education Coordinator

Diana Trajillo (505) 766-8044 - Girl Scout Coordinator

USFWS, Refuges & Wildlife

P.O. Box 1306

Albuquerque, NM 87103

Program: Completing CD ROM for middle school age youth on habitat
management

Region 3 - Environmental Education Coordinator

Tom Worthington (612) 725-3691
USFWS, Federal Building, 1 Federal Drive
Fort Snelling, MN 55111-4056

Field Stations: Minnesota Valley National Wildlife Refuge
Keith VanCleve (612) 725-3145
Program: Wetland Trunk - on loan

Suzanne Trapp (612) 725-3145
Program: Watchable Wildlife Patch and workshop sessions for
youth groups, *Watching Wildlife, A Skills Workshop*

Region 4 - Environmental Education Coordinator

Donna Stanek (404) 679-7177
USFWS, Refuges & Wildlife
1875 Century Blvd
Atlanta, GA 30345

Field Station: Panama City Field Office
Laura Jenkins, (904) 769-0552
Program: Gulf of Mexico patch developed for Girl Scouts
or
Gulf Island National Sea Shore, (National Park Service)
Susan Merrifield, (601) 875-0821

Region 5 - Environmental Education Coordinator

Sarah Bevilacqua (413) 253-8515
USFWS, Refuges & Wildlife
300 Westgate Center
Hadley, MA 01035

Field Station: Chesapeake Bay Field Office
Rich Mason (410) 573-4500
Program: 3D Watershed model of Chesapeake Bay - on loan

Region 6 - Environmental Education Coordinator

Sherri Featherman (303) 236-8145
USFWS, Refuges & Wildlife
P.O. Box 25486, Denver Federal Center
Denver, CO 80225

Program: Scientist in the Classroom, Endangered Species program - presentation

Field Station: Ecological Services, Cheyenne WY
Jane Roybal, (307) 772-2374
Program: Developing a wildlife patch for youth groups

Region 7 - Environmental Education Coordinator

Cathy Rezabeck (907) 786-3351
USFWS, Division of External Affairs
1011 E. Tudor Road
Anchorage, AK 99503

Program: Puppet Kits - Bears of Alaska - on loan

Connie Wassen (907) 786-3383 - Girl Scout Coordinator

Field Station: Ecological Services, Juneau, AK

Carol Hale (907) 586-7240

Program: Badge Burst, Wildlife Badge- Junior -Girl Scouts
Science in Action - Brownie and Junior - Girl Scouts